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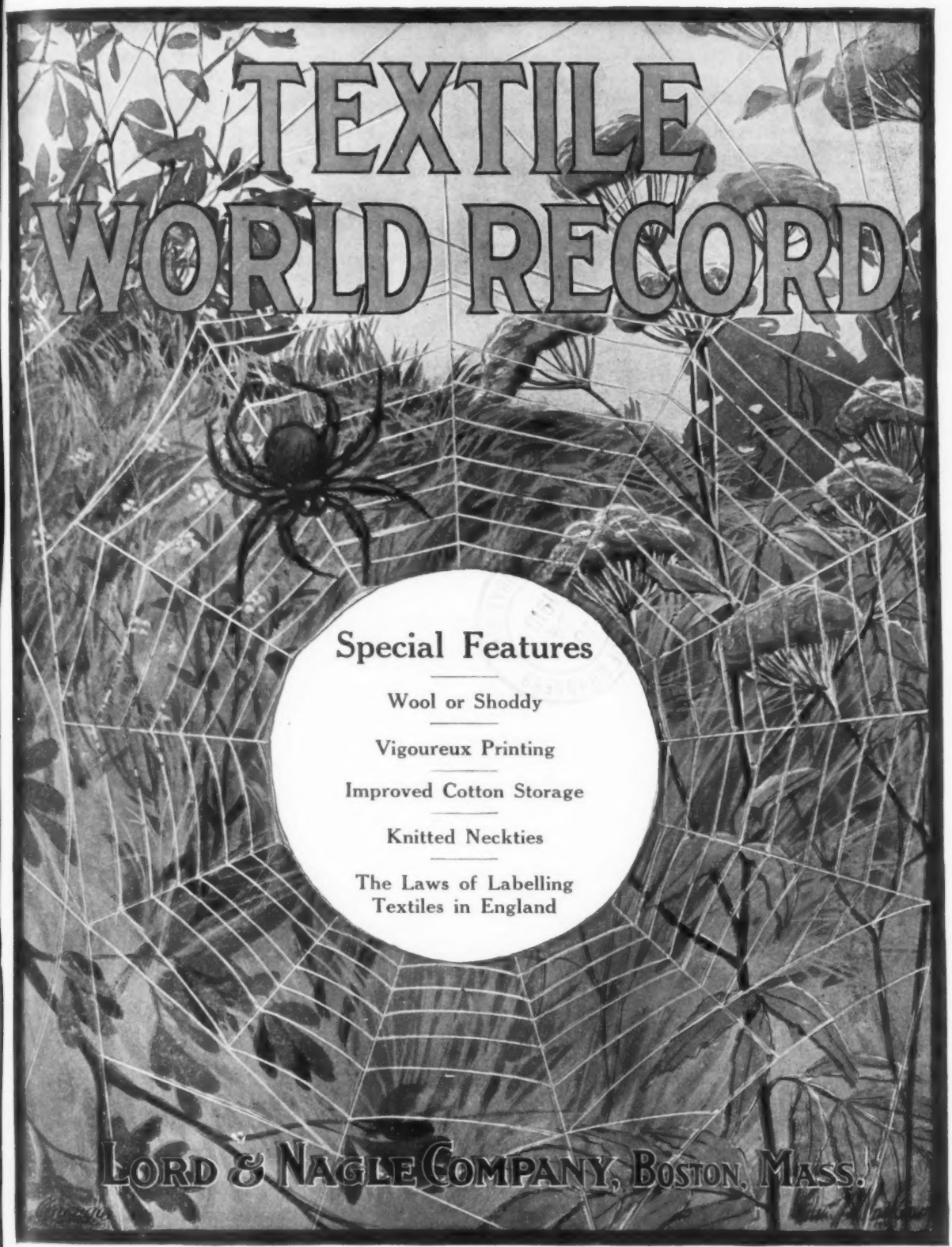


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## Correspondence.

We solicit correspondence on textile subjects. Articles accepted will be paid for. Name and address must always be given, not necessarily for publication. Subscribers are invited to make free use of our Questions and Answers Department; correspondence is strictly confidential.

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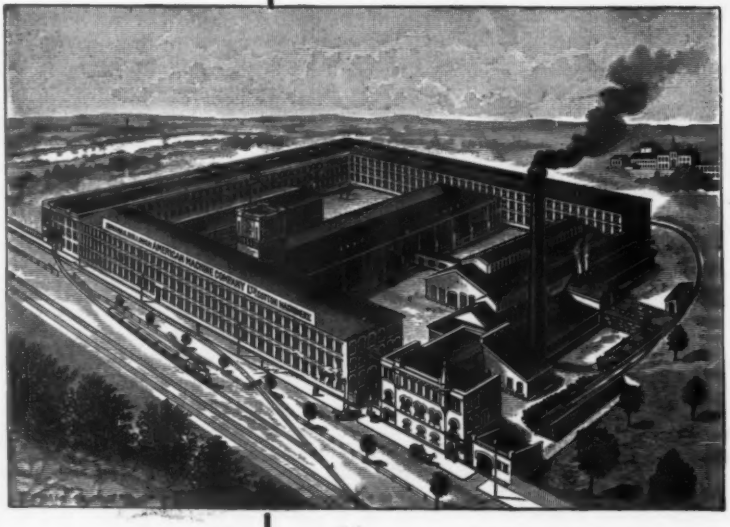

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# TEXTILE WORLD RECORD

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**The Textile World and Textile Record.**

VOL. 39 (NEW SERIES.) July, 1910 No. 4


# *Monthly Comment.*

### English Weights and Measures in the Philippines.

About a year ago we called attention to the edict issued by the Philippine government making the use of the metric system of weights and measures compulsory in the archipelago after Jan. 1, 1909. We published at the time letters regarding this question that had passed between the Bureau of Insular Affairs, Governor-General Smith and ourselves. General Smith waxed sarcastic in his comments on our protest against the metric decree, the following passage illustrating his state of mind at that time:

> It seems to us who are here on the ground and who really do know some little of the Philippines and of its customs and people, that it would be much harder to introduce the English system of weights and measures than it would be to introduce the more scientific and sensible metric system.

We replied to General Smith and bowed to the argument of superior force, but at the same time promising our readers that we would "watch and report upon the development of the failure that awaits the Philippine authorities in their attempt to prevent the use of American weights and measures in a country whose welfare depends so largely on close trade relations with the United States." Our letter to the Bureau of Insular Affairs in reply to General Smith was dated April 12, 1909. In almost exactly a year from that date evidence of the continued metric failure in the Philippines was supplied in a letter dated April 9, 1910, from the Manila Merchants' Association to the Governor-General, and which is in part as follows:

> Manila, P. I., Apr. 9, 1910.
>
> To the Honorable The Governor General of the Philippine Islands, Baguio, P. I.
>
> Sir: The Manila Merchants' Association has appointed the undersigned a committee to make representations to the government of the Philippine Islands for the purpose of accomplishing modifications or amendment of certain laws which are believed to be prejudicial to the best interests of the community. Objectionable provisions of existing laws especially referred to are contained in Sections 201 and 392 of Act No. 355 known as the Philippine Customs Administrative Act; also the exclusive features of the Metric Weights and Measures law as a whole. . . .
>
> The law imposing practically exclusive use of the metric system of weights and measures in the Philippines was, we believe, enacted without due consideration, being given to local conditions or to the external commerce of the island. It is true that the public was advised of the proposed action on the bill before its passage and that no objection of importance, if any at all, was put forth in opposition to it. But before the law became effective a committee of the Manila Merchants' Association endeavored, but without success, to have it amended. That objections to its exclusive features were valid has already been demonstrated by the necessity of modifying it in the case of the measurement of lumber and in the weight of precious stones and jewelry in order to permit of the use here of the same units and symbols with reference to those commodities as have for years been applied to them generally through-

out the world in their production and handling. That other modifications must follow is obvious when it is understood that our commerce is largely with countries that use the English system of weights and measures. All manufacturers of iron and steel and of cotton (these form a large percentage of the imports now and are destined to increase in relative importance) are produced and marked under the English system. The hat, collar and shoes that we wear are numbered on the basis of measurement by inches. Every piece of machinery, every tool, bolt, nail or screw and all such articles that are of daily use have to be ordered under the fractional system of measurement that has become standard in connection with their production throughout the civilized world. Enforced use of the metric system in France and Germany for many years has failed to change the units of computation in use by manufacturers there from the inception of industry. And here in the Philippines our hemp, sugar and copra will continue to be quoted by the picul and our rice by the cavan.

We do not suggest abolishment of the use of the metric system of weights and measures; for some purposes, notably the measurement of land areas, it is preferable to any other, but in many lines it is entirely inapplicable. We do ask, however, that the use of such systems of weights and measures as are legal and standard in the United States be made permissible in the Philippines and that the terms expressing weight or volume as applied to local products, that have become generally established through long usage, be standardized so that a picul or cavan may be known positively as the equivalent of the corresponding number of pounds or kilos.

Adoption of the metric system arbitrarily in the Philippines has created a feeling of animosity towards us among a large and powerful element of manufacturers in the United States. They held that it is a hindrance to closer commercial relations between the two countries, and this feeling caused us to lose the assistance and support of many who would otherwise have been valuable friends to the islands. There are many things we have yet to ask of the government of the United States and it is highly impolitic for us to antagonize the powerful manufacturing interests of that country by prohibiting the use here of the system of weights and measures that is standard there.

The fact is fully appreciated that at the time this legislation was enacted a drastic reform in the weights and measures system of the islands was imperative. Some authorized standard was necessary in order to prevent the many abuses that were being practiced by those handling directly the commerce of the Filipino people. But those abuses were not attributed to the use of a standard inch, foot or yard measure, or an ounce and pound weight, which cover a field of practical utility in the commerce of a community that cannot be satisfactorily supplied by the metric system.

Anticipating your distinguished consideration we are,

Very respectfully,
H. M. Pitt,
Martin Egan,
Committee.

General Smith is, we believe no longer Governor-General of the Philippine Islands. Possibly now with his vision improved by his removal from the ground he may learn from this petition of the Manila Merchants' Association that general custom is a power superior to any possessed by the government even of the Philippine Islands.

### Picking Cotton by Machinery.

On June 24 Theodore Price, the well known cotton speculator, gave an exhibition of the Price-Campbell cotton picking machine in the railroad yard, Park Sq., Boston. A number of last year's cotton plants were fixed upright in a scantling, making a row about 20 feet long. Scattered among these plants were flowers of different varieties. The machine, which is run by a motor, is built so that it straddles the row of plants, the cotton being stripped from them by revolving spiked rollers and aprons, which move backward at approximately the same speed as that at which the machine is moving forwards. About a hundred spectators gathered to witness the demonstration in response to the advertised invitations.

Promptly at the time announced Mr. Price appeared and ordered Harris, who operated the machine, to pick the cotton. The spectators crowded close up to the cotton plants and were persuaded to fall back and give the machine a chance, only by the vigorous threat from Mr. Price that he would call the police. Finally a passage way was made for the machine, which passed over the row, and as the plants reappeared behind the picker, it was seen that the cotton had been picked very clean, leaving the stalks and the flowers intact. The machine was run over the row several times, after which Harris inserted another lot of unpicked plants in the scantling, when the operation of picking was repeated.

The demonstration was a success as far as the plants in the scantling were concerned. Whether the same success will attend the machine under actual working conditions in the cotton fields is another question. Mr. Price claims that it has been successfully tested in the field in Texas and South Carolina. He states that ten ma-

chines are now being built at Woonsocket, R. I., and will be exhibited in operation in Texas this fall. A comparative manufacturing test of cotton picked by the machine and by hand from the same field has been made at the Wamsutta Mills under the supervision of the agent, Herbert E. Walmsley, who is also listed as a director of the Price-Campbell Cotton Picker Corporation.

While the Boston test showed that this was a remarkably ingenious machine that would pick cotton, the real test must be under prolonged working conditions on a large scale in the cotton fields. Until the machine has withstood that real test successfully it is impossible for any one to know whether it ranks with the cotton gin, the power spinning frame and other epoch marking textile inventions, or is one of the many devices of its kind which have fallen short of, and yet may have marked a step toward the goal—a successful mechanical cotton picker.

### Shoddy or Wool.

A valuable report on the distinguishing of wool and shoddy fibers on finished cloth has recently been made by Leo Pinagel, of the conditioning house at Aachen, Germany, and will be found in this issue. Many well-meaning persons in this country persist in believing that in some way the proportions of new wool and shoddy in finished goods can be accurately determined and that a law should be enacted in the interest of the consumer requiring wool goods to be labeled to show such proportions of the constituent materials. These agitators do not take the trouble to find out whether new wool can be distinguished from shoddy when mixed and manufactured into cloth. They believe it would be a good thing if such materials could be distinguished and from that they jump to the conclusion that it can be done. This is the fallacious line of reasoning on which all the agitation for "shoddy" laws is based, and we are very glad to have an opportunity to publish Mr. Pinagel's decision with the hope that it may contribute toward eradicating a particularly vexatious error.

### The British Cotton Growing Association.

Another Lancashireman has spoken out in meeting. This time the speaker is R. Clayton, J. P., a mill owner and cotton merchant of Rishton, who at a meeting called on June 9 to secure subscriptions to the British Cotton Growing Association, told those present what he thought of the question of increasing the world's cotton crop. His remarks are reported in the Textile Mercury as follows:

> While willing to support the Association, Mr. Clayton disagreed with the methods that had been, and were being, adopted in its pioneer work. In his opinion there was far too much sentiment in trying to utilize our Colonies, most of which, owing to climatic conditions, were not suitable for growing cotton at a reasonable price. Subscriptions were being collected for the purpose of discovering where to grow cotton. Money was being spent foolishly where they were not sure cotton could be grown, instead of being spent where they knew it would be of some service. Why had the Association not gone to Egypt, where cotton could be grown at a profit? And also to India, where only wealth was needed to ensure the growing of a great deal more raw material? Had India and Egypt not been suitable for all grades of cotton required, then all sentiment should have been put away, and they should have gone to America, where, in Texas and the Southern States, there were millions of acres of virgin soil, and a climate for growing cotton such as existed in no other part of the world! Had the Association used the money already spent in pioneer work in making a small Lancashire colony in America for cotton-growing, they would not only have assisted this country to an increased supply, but would also have been making large profits.

Slowly but surely the truth about the cotton supply is getting the upper hand in Lancashire. It has been a curious fact that Lancashire, the very citadel of free trade, should stubbornly refuse to accept the logic of its own trade doctrines when applied to cotton, one of the few products in which there is free trade throughout the world. A pound of cotton grown in America has the same effect on the supply of every mill on earth as has a pound of the same kind of cotton grown in the British Empire or elsewhere. The Britons who cling so fondly to the delusion that for them there is some peculiar benefit to be derived from British cotton, talk about the danger of speculative control of American cotton. As if the same

danger did not accompany cotton no matter where grown.

Cotton is attracted to the best market from all countries. Those who seek to increase the world's cotton supply have the simple problem of raising cotton where the required quality and quantity can be produced at the lowest cost. All human experience teaches that that locality is in our Southern States. Mr. Clayton recognizes this fact and has the courage of his convictions. Sooner or later the organized error which has prevented Lancashire from taking the nearest way will be dispelled and then Lancashire will have more cotton.

### Tariff Agitation and Business.

That business in the textile trade is greatly depressed admits of no question. In the cotton trade the depression is world-wide, and is explained by the large number of cotton spinning mills built during the past five years and by the diminished supply of raw cotton resulting from a decrease of 3,000,000 bales in the American crop of 1909-10, as compared with the preceding cotton year. Local causes may aggravate the situation here, but so far as this depression in the cotton trade is world-wide, just so far must local causes be absolved from responsibility for the depression in the United States.

In woolen manufacturing a different situation is found. Abroad the mills are busy and well supplied with orders for several months to come. This is the situation in both the carded woolen and worsted branches of the business. In the United States, on the other hand, the worsted industry is suffering from a depression more serious than that of 1907-08, and which has not been equaled since 1893-97. Carded woolen manufacturing is in a somewhat better position, but even there the activity is confined to but a few mills running for the most part on the cheaper grades of goods. What is the reason for this depression in wool manufacturing in this country? The president of a large wool manufacturing corporation replies, "Tariff agitation." In the following interview with a representative of a trade publication he said:

> We have done a little business on woolens, but are just as much at sea about prices of worsteds as heretofore. Everything is in a state of uncertainty, yet with the general business situation, the magnificent condition of growing crops and the almost universal prosperity of consumers there is certainly no cause for the depression and uncertainty in the woolen business. It is the politicians and newspapers who are still agitating the tariff and the so-called discrimination of schedule K who are to blame. Their very ignorance of the facts make them more bitter and persistent in their attacks. I have spent all my life in the industry in an intimate study of its various problems, yet am free to confess that I do not fully understand all of the intricacies of schedule K. It is impossible to estimate the vast damage done the industry and to wholesale and retail clothiers by this continued newspaper agitation, and yet newspaper representatives have the consummate gall to approach wool manufacturers for big advertising appropriations. They cannot attack us without injuring an enormous body of wage earners and consumers. For months my mills have not been running at more than half production, and tomorrow I am obliged to shut down my big mills for a two weeks' vacation. It is a shame that the low tariff politicians and newspapers of the country should force thousands of wage earners to suffer in this manner.

Not being advocates of a low tariff nor among those who "approach wool manufacturers for big advertising appropriations," we have no reasons on those grounds to differ from the views expressed, but we believe that there are much more fundamental causes for the depression. General business cannot be considered to be in a magnificent condition in a land where the high cost of living has become with good reason a national issue. Business does not begin and end with the manufacture of raw material into a finished product like wool cloth. There must be the subsequent manufacture into clothing, and the purchase of that clothing by consumers who are able to earn enough to supply their other wants. That is what makes good business. It is plain that in this country the high cost of certain necessities which must be provided before the wardrobe is replenished has been a potent contributing cause to the depression in the textile trade. Regardless of what may have been the cause of the increase in the prices of foodstuffs, the unavoidable

accompaniment of that increase has been depression in the textile trade. We are all bound inextricably together in the social system. We often forget this fact, but are from time to time reminded of it by a strike in the coal mines or by such a situation as faces us at present.

In this interview the statement is made by the manufacturer that the politicians and the newspapers that are agitating the tariff and the so-called discrimination of schedule K are to blame for the business depression. "And yet," he says, "newspaper representatives have the consummate gall to approach wool manufacturers for big advertising appropriations." It is impossible to avoid the conclusion from this statement that advertising in a newspaper carries with it a certain influence or control over the policy of the paper; that the representative of a newspaper cannot properly solicit advertising patronage unless he is able to show that the opinions of the paper conform to the ideas of the prospective advertiser. The other conception of the relations between a paper and its advertisers is that the advertiser pays for the publicity he obtains, and that the publisher performs his function with independence and such intelligence as he is able to command.

Regardless of which of these views is correct, one thing seems very clear to us, and it is, that advertising in a paper conducted on the former plan would be a very poor way in which to obtain desirable publicity. Publicity of the desirable kind is obtained by advertising in a journal having the confidence and respect of a large number of readers. A journal whose reading pages are made to conform to the wishes of the advertisers, which inserts, alters or rejects reading matter to suit its advertisers, will not long retain either the confidence or the respect of any one, and no one will have greater contempt for it than the advertiser who controls it.

On the other hand, a journal which conforms to the other conception of its duty, which publishes the news, which comments with independence and intelligence on questions of general interest, will possess the confidence and respect of the public and thus become the most valuable medium for desirable publicity.

Referring to the politicians and the newspapers, the manufacturer in the interview says:

> Their very ignorance of the facts makes them more bitter and persistent in their attacks.

There are always some misstatements of technical facts in any controversy in which those without specific technical knowledge are engaged. Even those who have technical knowledge frequently differ in their interpretation of the facts. But the charge of ignorance against all who may have the temerity to criticise schedule K seems to be rather far-fetched. That schedule was framed substantially in its present form forty-three years ago and the minor changes in it have not been in the way of improvement, nor adequate to meet the changed conditions of the present day. There should be no resentment of criticism of this schedule. There is nothing sacred about it. On the contrary, the highest interests of wool and worsted manufacturers and the very existence of the protective policy itself demand that the schedule be perfected after deliberate, scientific investigation by unbiased experts. Until it is so perfected there will always be agitation when politics are discussed. The surest way to end it is to remove any just cause for criticism.

### Argentine Wool.

Nearly a year ago we asked Major John M. Carson, Chief of the Bureau of Manufactures, to obtain and publish in the consular reports information from the principal foreign wool producing countries regarding the business of wool growing. Major Carson received our suggestion with favor and framed immediately a set of questions which were addressed by the State Department to all the American consuls in the various wool growing countries of the world. These reports have been coming in for the past two or three months, and being too voluminous for publication in the regular consular re-

ports have been forwarded to us for examination. We give one of the reports, from Consul General R. M. Bartleman, Buenos Ayres, in this issue and will publish others, as the wool supply of the world is as important and urgent a question as any that confront the textile trade.

### Metric Yarn Counts in the Silk Schedule.

Nestling snugly at the end of paragraph 397 in schedule L, silks and silk goods, of the Payne tariff bill is this little clause:

> In assessing duty on all spun silk or schappe silk yarn, the number indicating the size of the yarn shall be taken according to the metric or French system, and shall, in all cases, refer to the size of the singles.

Before commenting on this metric proviso for spun silk or schappe yarn we will state briefly what this remarkable paragraph 397 of the Payne bill accomplishes as far as the standards of weights and measures are concerned:

1. On silk yarn, whether single or ply, valued at not over one dollar per *pound*, the duty is thirty-five cents per *pound*.

2. Single yarn, in the gray, on skeins, warps or cops, and valued one dollar per *pound*, on numbers up to 205 based on the 1000 *meter* lengths per *kilogram*, forty-five cents per *pound*, and 10/100 cent per *kilometer-kilogram* number per *pound*.

3. Single yarn, exceeding *kilometer-kilogram* number 205, forty-five cents per *pound*, and 15/100 cent per *kilometer-kilogram* number per *pound*.

4. Ply yarn on *kilometer-kilogram* numbers up to 205, fifty cents per *pound* and 10/100 cent per *kilometer-kilogram* number per *pound*.

5. Ply yarn exceeding *kilometer-kilogram* number 205, fifty cents per *pound* and 15/100 cent per *kilometer-kilogram* number per *pound*.

6. Single yarn on bobbins, spools or beams, on *kilometer-kilogram* numbers up to 205, fifty-five cents per *pound* and 10/100 cent per *kilometer-kilogram* number per *pound*.

7. Single yarn, exceeding *kilometer-kilogram* number 205, fifty-five cents per *pound* and 15/100 cent per *kilometer-kilogram* number per *pound*.

8. Ply yarn, up to *kilometer-kilogram* number 205, sixty cents per *pound*, and 10/100 cent per *kilometer-kilogram* number per *pound*.

9. Ply yarn, exceeding *kilometer-kilogram* number 205, sixty cents per *pound* and 15/100 cent per *kilometer-kilogram* number per *pound*.

10. Single yarn, colored, bleached or dyed, in skeins or warps, up to *kilometer-kilogram* number 205, fifty-five cents per *pound* and 10/100 cent per *kilometer-kilogram* number per *pound*.

11. Single yarn, exceeding *kilometer-kilogram* number 205, fifty-five cents per *pound* and 15/100 cent per *kilometer-kilogram* number per *pound*.

12. Ply yarns, up to *kilometer-kilogram* number 205, sixty cents per *pound* and 10/100 cent per *kilometer-kilogram* number per *pound*.

13. Ply yarn, exceeding *kilometer-kilogram* number 205, sixty cents per *pound* and 15/100 cent per *kilometer-kilogram* number per *pound*.

14. Single yarn on bobbins, cops, spools or beams, up to *kilometer-kilogram* number 205, sixty-five cents per *pound* and 10/100 cent per *kilometer-kilogram* number per *pound*.

15. Single yarn, exceeding *kilometer-kilogram* number 205, sixty-five cents per *pound* and 15/100 cent per *kilometer-kilogram* number per *pound*.

16. Ply yarn, up to *kilometer-kilogram* number 205, seventy cents per *pound* and 10/100 cent per *kilometer-kilogram* number per *pound*.

17. Ply yarn, exceeding *kilometer-kilogram* number 205, seventy cents per *pound* and 15/100 cent per *kilometer-kilogram* number per *pound*.

18. Provided that in no case shall the duty be assessed on a less number of *yards* than is marked on the skeins, bobbins, cops, spools or beams.

Comment on this medley of weights and measures certainly cannot make its absurdity plainer than does the inspection of the confusion. Every lot of spun or schappe silk yarn presented at a United States custom house for import must be weighed by the pound for one specific duty, measured by the kilometer and weighed by the kilogram to determine another specific duty by the pound and finally the total duty must be adjusted to the number of yards marked on the package.

How did this mixture get into the silk schedule? We do not know. We do know, however, that there is an active, persistent and intolerant brotherhood of metric advocates, many of them in the employ of the government, who are constantly watching for opportunities to force the metric system into use, either by department rulings or by incorporating it into the statute law. A few weeks ago we discovered and exposed a trick to make the metric liter the standard for fruit baskets throughout the United States.

That exposure will, we hope, prevent the Lodge bill from becoming a law in its present form. Unfortunately our discovery of the metric proviso for schappe silk comes too late for preventing the mischief. But the confusion in paragraph 397 of the Payne bill will not be in vain if it results in arousing the public and the law makers to the danger of confusion of our weights and measures.

---

There are about 30,000 persons employed in the silk industry of England and of these 20,000 are women. The average wage of the women and girls in this industry is $2.68 a week of 54 1/2 hours.

Dundee is practically the only remaining seat of the jute manufacture in the United Kingdom, and of the 42,000 people employed in the industry, about 39,000 are in Scotland.

The export shipments of wool from the various ports of the Argentine Republic for the last quarter of 1909 amounted to 128,349 bales, 11,126 bales of which went to the United States.

**Events of Interest in the Textile Trade.**

June 1. The sliding scale agreement between the cotton manufacturers and operatives of Fall River, Mass., was terminated on May 28th and the mills are now operating on the old scale of wages but without the agreement.

June 1. The Master Cotton Spinners' Associations of Lancashire decided to postpone the proposed reduction in wages for three months.

June 1. American importers make large shipments of foreign wool back to England for resale there owing to the depression in the wool market in the United States.

June 6. The American Woolen Company file a protest with Secretary of War Dickinson against the practice of applying more severe tests to the goods of that company than to goods of competitors.

June 6 to 9. The seventh international cotton congress was held at Brussels.

June 7. The convention of the National Association of Clothiers at Baltimore. Report of the tariff committee favored a revision of schedule K and the appointment of a tariff commission.

June 10. The Cotton Manufacturers' Association of South Carolina meet at Henderson and pass a resolution providing for a partial shutdown of the mills in July and August.

June 11. M. C. D. Borden announces that his mills at Fall River, Mass., will run on alternate weeks until further notice. B. B. & R. Knight of Fall River also announce a curtailment of production.

June 17. A Federal grand jury brings in indictments against James A. Patten, Eugene B. Scales, Sydney J. Harman, Robert N. Thompson, Charles A. Kittle, Morris H. Rothschild, Frank B. Hayne and William P. Brown, charging them with conspiracy in restraint of trade in connection with cotton speculation.

June 23. Magnus Brown, president of the Minnesota Wool Growers' Association, announces a plan by which the wool growers will lease a mill and manufacture their own wool into cloth.

June 30. E. S. Holmes, Jr., formerly associate statistician of the Department of Agriculture, pleaded guilty to the charge of misconduct in office in connection with the cotton statistics leak in 1905. He was fined $5,000, which he paid.

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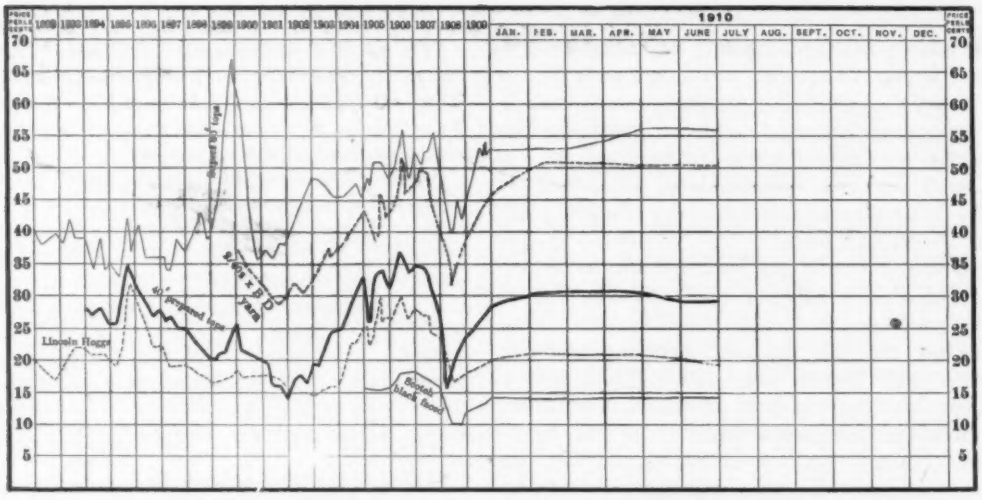
In 1908 Italy imported 911,573 bales of cotton and exported 46,164 bales, while the value of the imports of cotton goods amounted to $7,615,558.




COURSE OF PRICES FOR WOOL, TOPS AND WORSTED YARN AT BRADFORD, ENG.

## THE BRADFORD MARKET.

*(By Our Special Correspondent.)*

Bradford, Eng., June 28, 1910.

Values on this market are more critical than for a year past and the spirit of speculation is dead. Merino values are firm, but the material is more plentiful and the prevailing prices are constricting business. Crossbreds are weak and dull. English-grown wools are only just coming forward and their values are unproved at the moment. At Leith up to 12 3/4 pence for washed and 10 3/4 pence for unwashed half-bred hoggs was paid apparently by dealers who had sold the material ahead. Others did not feel justified in putting wool to stock at those prices. At Stow Market, long Lincoln hogg wool realized 9 to 9 1/4 pence, first cost, and this does not satisfy all farmers. On the whole, English wools are probably worth very little more than last June and buyers are conservatively disposed about them. There is no probability of any overbidding in the country sales.

Machinery is all well employed and exceedingly busy in the carded woolen branch, where various sets of operatives are demanding higher pay. Repeats are rather poor for men's worsteds and in the dress goods line the export trade is conspicuously better than the domestic branch.

There is no advance in noils and between the price of noils and the price of blankets manufacturers ought to be doing better than usual. There is rather more trade in mohair.

### Stencilling Fabrics.

*Editor Textile World Record:*

I want a method of cutting zinc stencil plates without punching and distorting the metal. In applying the color what are the advantages of a pneumatic spray or air-brush? What price is paid for stencilling?

Hoosier (1202).

Our special English correspondent replies as follows:

To cut zinc plates use a fretsaw, which gives a good clean outline without rupturing the structures of the metal. The spray wets the plate and necessitates its careful wiping on each removal. In one man's experience the most satisfactory instrument for applying and gradating the color is a long, soft brush. The color is applied to one spot and worked outwards to the circumference with a circular motion. The price paid for stenciling in England varies with circumstances; sixpence (12 cents) a yard is the average price.

Regent.

There has been an increase of more than 11,000,000 spindles and 87,000 looms in Lancashire since 1905.

## WOOL GROWING IN ARGENTINA.

*A Report from Consul General R. M. Bartleman, dated Buenos Aires, March 5, 1910.*

The following report is in reply to a series of questions addressed by the State Department to American consuls in the principal wool growing countries. The questions as well as his answers are given by the consul:

1. Quality and kind of wool grown.

Almost all qualities; quality greatly improved during recent years. Kinds: Merino, Rambouillet, Shropshire, Lincoln, Negrete, Southdown, Leicester, and other minor varieties.

2. Size of clip for a series of years.

| | |
|---|---|
| 1898, bales | 465,000 |
| 1908, bales | 430,000 |
| 1910, bales | 340,000 |

An Argentine sheep yielded on an average 3 1/2 pounds of wool in 1878, 5 pounds in 1900, and 6 pounds in 1910.

3. Number of sheep for a series of years.

Figures for only two recent years can be given with accuracy, as other figures are estimates. The census of 1895 and 1908 was:

| Year. | No. of sheep. |
|---|---|
| 1895 | 74,379,562 |
| 1908 | 67,211,754 |
| 1910 (estimated) | 70,000,000 |

4. Quantity of fine Merino, and fine, medium and crossbred.

Census of 1908 (latest data).

| | Fine. | Crossbred. |
|---|---|---|
| Lincoln | 423,954 | 17,983,262 |
| Rambouillet and Merino | 230,985 | 8,760,382 |
| Shropshire | 18,154 | 286,796 |
| Negrete | 13,606 | 375,332 |
| Southdown | 11,207 | 289,002 |
| Leicester | 3,217 | 87,271 |
| Others and unspecified | 166,190 | 6,102,230 |
| Total | 867,313 | 33,884,275 |

Production.

| | |
|---|---|
| Merino | 20% |
| Crossbred, Fine | 10 |
| Crossbred, Medium | 40 |
| Crossbred, Lincoln | 30 |

5. Method of shearing and packing.

Shearing is now generally done by machinery; in the more remote districts, it is done by hand. Packing is almost entirely done by steam or hydraulic presses; horse-presses are used in the distant country.

6. Method of selling.

The French buyers mostly buy direct from the grower—especially the wool bought annually by Messrs. Balzon for use in clothing for the French army. Generally, however, the wool is sent by its owners directly to the Buenos Aires and Bahia Blanca markets, where the foreign buyers examine and purchase it. It is then shipped to different parts of the world.

7. Possibilities of increase of production.

It is very difficult to say. Until 1898 the production of wool gradually increased, but from that time on it grew slightly less, until the production of 1910 reached scarcely 340,000 bales as against 430,000 in 1909, and 465,000 in 1898. The prolonged drouth was responsible, in the main, for this decrease. While sheep-raising is greatly on the increase in the new and sparsely-settled territories of Santa Cruz and the Chubut, as well as Tierra del Fuego, it is markedly on the decline in the older and more settled provinces, as Buenos Aires and Santa Fe. The increase of quality and the scientific training in oviculture being given by the new agricultural school will undoubtedly tend toward aiding the improvement of the wool, and the care of the sheep. The new irrigation works, many of which are to be built in the sheep country, will do away with droughts to a great extent, and remove a great peril.

8. Kind and quantity of wool suited for the United States.

Crossbred wool of the better qualities appears most suited.

Value of exports of wool from Argentina to the United States, in United States currency:

1908 ..... $4,209,194.44
1909 ..... 6,778,944.61

9. How and where is the wool classified into grades?

First, on the ranches where raised; finally and principally, the quality, fineness and purity are closely classified at the Central Produce Market, Buenos Aires. Sometimes the individual buyers classify it.

10. How and where are the "broken fleeces" made?

At the Central Produce Market, Buenos Aires. By cutting out the belly, quarters, etc., and cleaning the fleece as its purchasers require. This is done in the warehouses.

11. How and where are the "pieces" made?

In the same manner and at the same places.

12. How and where are the "casings" made?

At the warehouses where shipped.

13. How and where are the "matchings" made?

They are made at the markets where the wool is bought, and especially at the warehouses, where the quality is examined.

14. How much of the clip is scoured?

Almost none.

14a. To what countries is the scoured wool shipped?

This varies very much for different years. Mostly to France, England and to the United States.

15. How much of the wool is pulled from the skins of dead sheep?

Practically none on the ranches; the slaughtering establishments do a little.

16. Describe the method of pulling.

By hand, on the ranches; by chemical processes, in the slaughter-houses and packing establishments.

17. Is the pulled wool brushed by hand or machine during the process of pulling?

By machine.

18. How much, if any, of the clip is used in domestic mills and for what kind of goods?

Less than 1 per cent.—for cloaks, blankets, hats, etc.

19. What quantity of manufactured products are exported and to what countries?

Practically nothing—very little to Paraguay and Bolivia.

20. Profits and losses in wool growing.

Extremely hard to give any definite answer. Depends on locality, drouth, etc. Everything varies so much that it is almost impossible to furnish anywhere near a definite reply.

21. Wages paid on the ranches and in the wool trade.

Peons (day laborers), $20 to $50 Argentine paper a month on the ranches ($8.49 to $21.23 U. S. currency).

The same, in warehouses and wool markets, $3 to $10 Argentine paper a day ($1.27 to $4.24 U. S. currency).

Wages in the trade are often fixed by home parties in the United States, England, France, etc., who send out their buyers. Wages of clerks, etc., vary but little from average in Buenos Aires.

22. Method of financing wool growing and trade.

a. By middlemen, who buy wool from the ranches to sell it to the Buenos Aires market.

b. By the exporter, who buys wool from the middleman or producer, and sends it to the factories in the United States or Europe.

c. By the European buyer, who sends his purchaser to buy in the Argentine markets.

23. Sizes of flocks.

From 300 to 3,000 or 4,000—average 550. The largest flocks exist in the Province of Buenos Aires.

24. Pests, such as dogs, rabbits, etc., that affect the wool clip, and methods of protection adopted.

Very few—no dogs or rabbits to worry sheep. "Scab" bad,—chemicals mixed with water, and sheep dips are used. Drought very bad—irrigation remedying this.

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Only about 6 1/2 per cent. of the linen manufacture of the United Kingdom is done in England and Wales.

For the three months ending March, 1910, the exports from Bradford to the United States were valued at $5,333,085, an increase of $935,914 over the same period of 1909, and of $2,431,940 in 1908.

## SHODDY OR WOOL.

*By Leo Pinagel, Director of the Conditioning House and Chairman of the Testing Commission for the Textile Industry at Aachen, Germany.*

(Translated from the German by the Editor of the Textile World Record.)

(From Leipziger Monatschrift fuer Textil-Industrie.)

The Testing Commission for The Textile Industry, at Aachen, recently received from a manufacturer a sample of wool dyed gov-

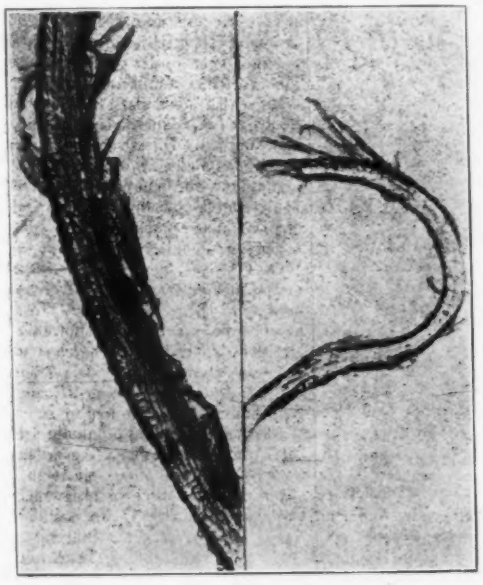

FIG. 1.

ernment cloth with the request that a test be made to determine whether it contained any shoddy. The request for this test was made because the government had rejected the goods on the ground that both warp and filling were manufactured from stock containing shoddy. As is well known, the mixture of shoddy in government goods is strictly forbidden. The manufacturers who mix shoddy in the material for such goods are liable to a fine. Thus the test for the presence of shoddy was one calling for the greatest care in the interest of both the government and the cloth manufacturer. To make this test it is necessary first to have a clear understanding as to what shoddy is, and further to determine what indicates with certainty the presence of shoddy. These

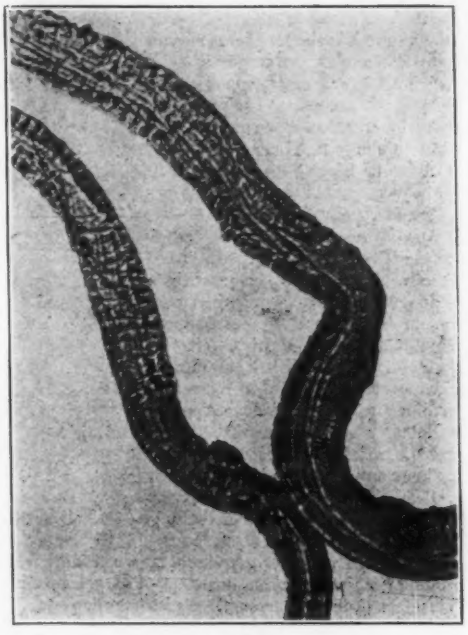

FIG. 2.

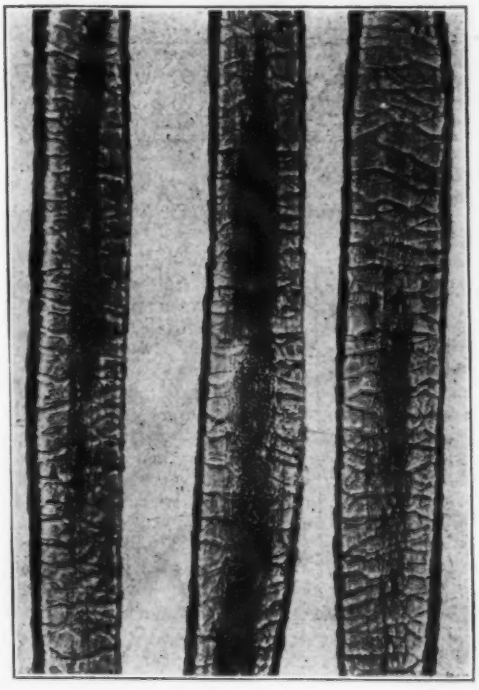

FIG 3.

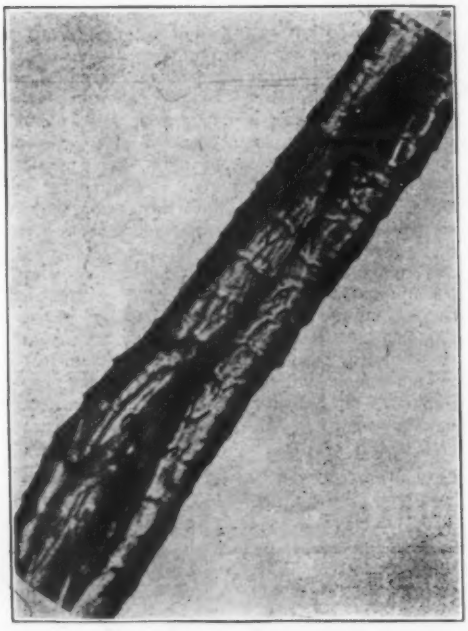

FIG. 4.

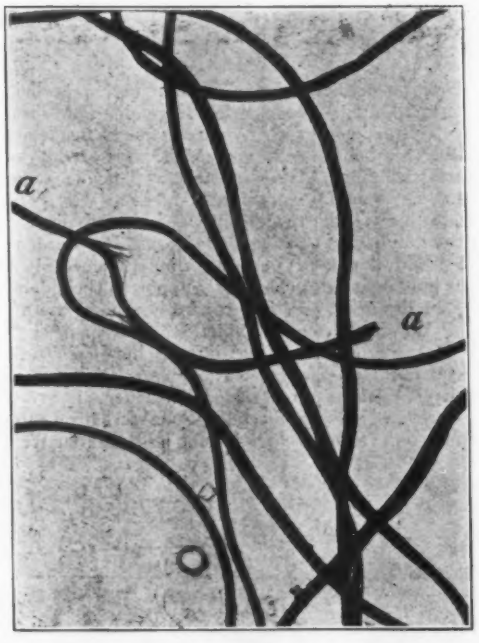


FIG. 5.

questions are of so much importance for both parties, on the one hand for the manufacturer as a producer, and on the other hand for the government as a consumer, that it seems very desirable the results should be published in order that an intelligent discussion of the question might be started.

Some years ago the Cloth Manufacturers' Association reached a decision on the question whether garnetted yarn waste, which consisted exclusively of pure wool, should be designated as shoddy when mixed with other materials. The decision was in the negative. At every stage of the manufacturing process waste is made. Pieces of short wool drop from the picker and are sold as burr waste. Cleaning the cards results in making waste which is used as a substitute for wool. Hard and soft wastes are made in the spinning process and are mixed with other materials to be manufactured into cloth. Long stapled gig flocks and even short shear flocks are used to raise the apparent quality of certain grades of goods. None of these materials, however, is known as shoddy, consequently a manufacturer who uses them and designates his goods as "free from shoddy" is not guilty of marking his goods falsely.

The wool fiber, however, is reclaimed only from the finished cloth. If rags and cloth clippings are picked and opened up the resulting material is shoddy. What changes does the wool fiber undergo during the manufacturing process up to the stage where it is known as shoddy. In carding and spinning the fiber is combed out. It is subjected to the action of card clothing which has a tendency to damage it. The wool or the woven piece is sometimes carbonized. Sulphuric acid affects the fiber giving it the appearance shown at Fig. 1. If, as is unfortunately often the case, the cloth is fulled with soap which is not neutral, but which contains an excess of alkali, a decomposition of the fiber often results, as shown at Fig. 2. In gigging the cloth the wire or points of the teasel have a tendency to remove the scales from the fiber, as shown at Fig. 3.

Further changes of the fiber often take place in the dyeing process, as, for example, by the use of excessively strong oxidizing materials and bleaching compounds, giving the effect shown at Fig. 4. Thus we see that the original fiber is subjected to many changes during the manufacturing process. If a sample of cloth is examined under the

FIG 6.

microscope and fibers found having the appearance of those just mentioned, the supposition arises that shoddy is present and the inexperienced observer will often state that as a fact. This, however, is not right, because, as we have seen, the pure wool fiber is subjected to these changes.

Let us go a step farther. Fibers were loosened from the cloth under consideration and which was mentioned at the beginning of this article, and in some places they showed the appearance illustrated at Fig. 5. The fiber is split. The same appearance, Fig. 6, however, is observed in the fibers from a sample of brown dress goods manufactured from pure wool. The split places are numerous and very prominent. Fiber, a, Fig. 5, was separated and examined under a higher power microscope, Fig. 7, showing the split parts of the fiber very plainly.

I recently examined the fibers, Fig. 8, from worsted tops which apparently had been made from diseased wool. The fiber was rotten and brittle. If such a wool is

FIG. 7.

mixed in small proportions with sound wool before scouring, it is impossible for the most experienced wool expert to distinguish the two. Thus we must reject the contention that a split or otherwise abnormal fiber is to be taken as proof of the presence of shoddy. Consequently the microscope is unreliable and worthless for such an investigation. We are thus compelled to rely upon the eye and handle of the cloth. It is a common practice to designate short or brittle fibers as shoddy. Nothing could be farther from the truth. I recall on this point that our finest wool is short staple and that

many grades of wool, including those used for government goods, contain short and brittle fibers. The stronger and sounder the wool is, the better does it felt in the mill. The harder the felt the more must the goods be gigged in order to raise a nap.

It is, therefore, clear that in such goods the fibers will be torn by the teasel or the napper wire. In shearing the goods to get

FIG. 8.

a smooth finish the long hairs are removed and the shorter ones remain. For these reasons the presence of short fibers in the cloth cannot be taken as proof that shoddy has been used. Under these circumstances it is amusing to find, as was recently the case, a court expert examining cloth under the magnifying glass to determine the proportion of shoddy, and recording as his opinion that the proportion was 1/2 per cent. It is, however, a serious matter for a manufacturer to lose a case on the strength of such testimony. We feel called upon, therefore, to state our opinion emphatically and without reservation: We have found up to the present time no reliable means to determine by scientific observation the presence of small quantities of shoddy. Opinions to the contrary, whether private or official, are wholly without foundation.

There is only one reliable method to determine whether shoddy has or has not been used in the manufacture of a fabric, namely, the production of the spinners' lot books and the sworn testimony of the persons who made the record. In this way it is possible for the manufacturers to obtain justice and for the government to make sure of a delivery according to specifications.

### Consumption of Domestic and Foreign Wool.

*Editor Textile World Record:*

What is the proportion of domestic and of foreign wool consumed in the United States?

Pericles (1204).

We assume "Pericles" means scoured wool, as the relative proportions of foreign and domestic wool in the grease would be of but little interest.

There are a number of difficulties in estimating the scoured weight of the wool used in the United States. First, there are no reliable statistics of the domestic clip. Estimates are made by the Department of Agriculture, but by a method that opens the door wide to serious errors. The second difficulty is in estimating the scoured wool equivalent of the imported manufactured goods. For lack of a better way we will use the frequently accepted ratio of 3 pounds of grease wool for each dollar's worth of goods. Another source of error is the variation between the amount of wool consumed and the total obtained by adding the imports to the domestic clip. Still another source of error is found in estimating the shrinkage in scouring domestic and foreign wool. Estimating the domestic clip at 125,000,000 pounds scoured and taking the imports for 1909 and a shrinkage of 40 per cent. in scouring as a basis, we obtain the following result:

| | Grease. | Scoured. | % Scoured. |
|---|---|---|---|
| Imported | .... 358,787,900 | 215,272,740 | 63% |
| Domestic | .... .... | 125,000,000 | 37% |
| | | 340,272,740 | 100% |

These proportions of 63 per cent. of foreign and 37 per cent. of domestic wool, scoured weight, are approximately correct for 1909, and may be accepted until a better estimate is forthcoming.

## THE LAW OF LABELING TEXTILES IN ENGLAND.

*BY REGENT.*

The cry for laws to make the labeling of textiles with particulars of their composition compulsory has moved a reader to invite information concerning the oft-cited British Merchandise Marks Act. That piece of legislation is worth looking into as well for what it does say as for what it does not. It is one of whose working England has had a fairly long experience and some of the most interesting points raised under it have arisen in the textile trade.

Before giving its main provisions let it be said that this is not a "shall" Act laying down minute directions of what to do. It belongs to the much more desirable "shall not" class of legislation which, while aiming at due security against malpractices, seeks at the same time to leave traders a wide margin of liberty. To that extent at least it is in harmony with the best principles of good government and this is something that cannot always be said of reform measures.

The Act was passed in 1887 and with trifling subsequent additions it remains since then untouched. It applies to two circumstances, namely to forging and falsely applying registered trade marks and to false trade descriptions of goods. It is designed to be administered with reason, and persons who can show that they had taken all reasonable precautions, who when challenged readily gave all information in their power, or who have proof that they acted innocently, easily escape from its meshes. Otherwise the penalties are sufficiently severe. The maximum punishment on indictment is two years' imprisonment with or without hard labor and a fine. On summary conviction the penalties may be four months' prison or $100 fine for a first offence and six months or $250 for a second. In any case the offending articles are forfeited on conviction. The general scheme and intention being explained, it rests next to turn to the particular definitions of what constitutes a false trade description.

Trade description means any description, statement or other indication, direct or indirect.

(a) As to the number, quantity, measure, gauge or weight of any goods.

(b) As to the place or country in which any goods were made or produced.

THIS TICKET CONFORMS TO THE LAW.

(c) As to the mode of manufacturing or producing any goods.

(d) As to the material of which any goods are composed.

(e) As to any goods being the subject of an existing patent, privilege or copyright.

The use of any figure, word or mark which according to the custom of the trade is commonly taken to be an indication of any of the above matters.

A false trade description means a description false in material respects as regards the goods to which it is applied, and includes every alteration of a trade description whether by way of addition, effacement or otherwise.

These citations from the body of the Act elucidate the points of prime importance. So far as textiles are concerned it is obvious that cases of short-reeling of yarn or of sewing thread can be taken under it and punished. The fact that the yarn was not ticketed on the bundles, but was only invoiced of a wrong count would not obstruct the prosecution. It is equally plain that a prosecution would lie against the man who knowingly sold power-woven cloth as hand-

FRENCH AND ENGLISH LANGUAGES. "MADE IN FRANCE" MARK IS THEREFORE REQUIRED.

woven. There is in fact an analogy in the punishment of a Sheffield firm for selling machine-cut as hand-cut files. A Leeds verdict has shown that you must not call goods "all wool" when in truth they are only "woolen" and composed in part of cotton. No obligation is laid on the manufacturer or dealer to describe his cloth either as one thing or another. The Merchandise Marks Act only forbids him to mislead.

In case of clear infraction the truth and the punishment lie on the surface, but of course under every law there are infractions that are not clear and there is sometimes a conflict of evidence as to what is, or what was, the custom of the trade. A long and costly battle was fought to determine the right use of the word "Dresden" as applied to china. Did it mean china of a particular style, class or character made anywhere, or was its use exclusively applicable to Dresden china from Dresden, Germany? Trade experts did not agree and the court would not accept the wider definition. A longer and costlier series of engagements raged round the title to call raised blankets "Witney." The outside blanket makers failed to convince the court that prior to 1887—the year of the passage of the Act—"Witney" had a generic and not a local application.

YDS

REQUIRES WORDS "MADE IN GERMANY," "FRENCH FABRIC" OR LIKE DESIGNATION.

A Leicester case raised the question of trade custom in another phase. Downing & Co. were attaching "Natural Cashmere" and "Natural Wool" labels to knitted vests containing 59 per cent. of cotton. Several hosiery manufacturers deposed that "natural wool" meant wool only and that by trade custom "merino" was the name for knit goods composed of cotton and wool. The culprit was fined $25. I step aside to add that by trade custom in one part of Yorkshire "merino" is a synonym for rags, in another "merino" stands for a cashmere-like dress stuff and then there is "merino" wool, which in some cases is more truthfully fine crossbred.

Fifteen years ago, the right to call cotton

goods "flannelette" was challenged, an article that had been on the market since 1874 and that was in effect an improvement on what had previously been called Wellington shirting. In vain the flannel manufacturers sought to argue that the word was a diminutive of "flannel," that it suggested that some wool, however microscopic in proportion, was present. The magistrate retorted that nobody thought velveteen was silk or was deceived by the name "plushette." He remarked on the fact that no member of the public had come forward to testify to his own deception. The flannelette, like the Witney, case was first and foremost a manufacturers' action, ostensibly brought in the interests of the public, but actually for the purpose of keeping trade from others. This aspect of the operation of the law deserves notice and if it is urged that the rivals would have gone to war in any event either on one pretext or another it remains to say that the Merchandise Marks measure was the most convenient instrument for their purpose.

On the whole it is more edifying to turn to the long list of successful prosecutions engineered from Belfast against drapers who sell union or cotton towels, collars or cloths as linen. Then the organizers of peasant industry have turned the Act to legitimate account in pursuing clothiers who make free with the name "Donegal" applied to factory-woven English tweed. The linen traders send their own inspectors round to entrap shopkeepers into writing the word "linen" on a bill for cotton articles. The benevolent ladies who look after the cottage industries keep an eye on unscrupulous advertisers and instigate prosecution by the Board of Trade.

Since 1891 this department of the national government has been free to carry through proceedings if, in the opinion of its advisers, the matter concerns the general interests of the country, of a section of the community or of a trade. The Act is a deterrent to particular sorts of misrepresentation by retailers who now have to be careful how they mislead. A speaker at a dinner of the Farmers' Club in London complains that union goods are sold as flannels and exhibited in shops as flannels every day, but the shopkeeper does not commit himself to calling them flannel on the invoice. The makers of "Viyella" and similar proprietary blouse and shirting cloths composed in part of cotton are scrupulously careful to avoid the same word.

A method followed by parties desirous of preserving the purity of a trade description is shown in a passage from the current proceedings of the London Chamber of Commerce. This motion was carried:

> "THAT it having come to the knowledge of the Sub-Section that textile materials manufactured in England and other countries in Europe, from silk, silk and wool, and cotton, are being sold under the designation of 'Shantung,' 'Shantun,' or 'Shantungs,' with or without qualification, the members of the Sub-Section desire to place on record, that the only goods which can properly be described as 'Shantung' or 'Shantungs' are PONGEES woven in the PROVINCE OF SHANTUNG (or adjacent districts) in CHINA, from Wild Silk (Tussore or Tussah), which goods have been known in all parts of the world as 'SHANTUNG PONGEES,' 'SHANTUNGS,' or 'SHANTUN,' for many decades.
>
> "THAT copies of this resolution be circulated to the trade and general press so as to ensure that only goods which can properly be described shall be offered or advertised for sale as 'SHANTUNG' 'SHANTUNGS' or 'SHANTUN.'"

In other words, the importers of the article take this means of defining and crystallizing trade custom in view of a possible prosecution of those Lyons firms who employ an ambiguous title. The resolution is at once a notice of warning and a piece of ammunition for use in court.

These points are the ones that are most to the present purpose but it is not these that have made the name of the Act a household word in England. Its sixteenth section prohibits the importation of foreign-made goods "bearing any name or trade mark, being or purporting to be the name of any trader in the United Kingdom, unless such name is accompanied by a definite indication of the country in which the goods were made." In practice all foreign-made goods bearing on them words in the English language are required to carry also a definite indication of their country of origin. Goods marked in foreign language or not marked at all escape the obligation. This is the law that familiar-

ized England with the legend "Made in Germany" and it is beyond serious doubt that the law has worked very well for German trade.

German goods before 1887 were everywhere regarded as cheap and nasty and were often passed off by stealth. Some of them are still regarded in that way and some are palmed off yet as of a different origin. But the Merchandise Marks Act caused the origin of a great many kinds of goods to be exposed, showed the public that not all German goods are inferior and that some are indispensable. A huge advertisement was not so much given to as forced upon German manufacturers and all latter-day propositions for substituting "Foreign Origin," "Imported," or "Not British" for "Made in . . ." are keys for a stable from which the horse has gone.

Again the Act has had another unwelcome effect upon England's entrepot business. London warehousemen have long done a large export of foreign goods in addition to domestic ones. The "Made in Germany," or "Made in U. S. A." labels undoubtedly caused some of their customers to buy direct. The precise damage under this head cannot be estimated and the traffic in foreign articles, overt and covert, is still large and likely to remain so. Indeed manufacturers outside of the primary industries complain persistently of the fraudulent use of British names. A thousand of them are sympathetic to the new "Register of British Manufacturers" which will exclude those quasi manufacturers who sell foreign goods. The members propose to register a collective trade mark after the Irish and Canadian models and to beat the British drum in all directions. Usually schemes of this kind have come to little in the past and in the present organization of the industry this one offers no substantial attraction to textile manufacturers.

From this short story of the framing and intention of the Act, its revealed merits and apparent defects, its uses and abuses, anybody is at liberty to judge what to copy and what to avoid in formulating any American improvements. We have people in plenty who think the measure here described does not go far enough in one respect or another and nobody claims perfection for it. Tinkering changes in it are being continually proposed, but its broad principle of non-interference except in case of necessity will doubtless be perpetuated in defiance of crocheters and cranks. A minor safeguard may be noted in closing. It is expressly laid down that no prosecution shall be commenced after the expiration of three years or more than one year after the first discovery of the offence by the prosecutor, whichever happens first. This check on merely vengeful actions may be salutary.

## LINING CLOTH WITH CORK.

*BY GAUL.*

This process consists in covering the back of the cloth with a thin layer of cork in order to render the fabric waterproof. The cork is applied so that it becomes part of the fabric, it being impossible to separate the cloth from the cork. This process is practicable for all kinds of goods, whether grey or in colors and regardless of the nature of the textile material. It has been known for a number of years and is the subject of several patents. The cork is intended as a substitute for rubber and it is, therefore, possible to compare respective values of these coverings by comparing the properties of cork and rubber. In the first place cloth covered with rubber emits a well known and offensive odor, while the cork lined fabric is entirely free from this objection. Rubber being a perfect insulator, prevents the escape of perspiration and causes a condensation in the interior of the clothing. With the cork this difficulty is obviated because the lining, although a perfect insulator, absorbs the humidity from the body. The cork affords protection against exterior heat or cold as well as against moisture, and is, therefore, well adapted for sporting garments. It is also well adapted for tents, traveling bags, etc. The cork is about 1/100 inch thick while the rubber is 1/25 inch thick. It follows that the cork lining is

much lighter than the rubber, making the fabric well suited for use in flying machines.

It is well known that rubber cracks as it becomes dry, whereas cork is more durable even than the cloth on which it is laid. It is also agreeable to the touch, the velvety surface having the appearance and handle of chamois skin. At high temperatures the rubber is decomposed, while under the same conditions the cork remains unaffected. It is well adapted for being sewed either by hand or on the machine. Because of the extreme thinness of the cork lining, the fabric retains its flexibility and elasticity unimpaired and is not easily crushed out of shape.

Cork lining is well adapted for upholstery. Portieres lined with cork are impervious to sound, while cork-lined carpets deaden sound and prevent the passage of the dust. Cork-lined goods can be washed with hot water and soap and likewise disinfected, offering in this respect a marked advantage over rubber-lined fabrics. A layer of cork can be placed between two thicknesses of cloth in order to form coverings for use in hospitals. Because of the manifest advantages of cork-lined fabrics, much attention has been given to their manufacture on a commercial scale. The various processes are of two types: 1. Application of the cork in powdered form; 2. Application of the cork in the form of thin sheets. The first method is the older, but it does not seem to have had the same success commercially as the application of cork in sheets.

1. Application of the Cork in Powdered Form. The cork is first powdered by any of the ordinary methods. The cloth to be covered is then passed through a machine such as is used in rubber mills and receives a coating of a solution having rubber as a base, this serving as a foundation for the cork. This solution may be colored to bring it to the desired shade. After this operation and before drying the cloth is passed through a machine which covers the surface with a layer of finely powdered cork. The cork is applied by being sifted through very fine vibrating sieves moved by an eccentric. The volume of powdered cork is regulated to suit the thickness of the coating desired. The cork is held on the cloth by the gum solution which is still damp at this stage of the process. The cloth is then passed over a brush on which the bristles are arranged in spiral form. This brush revolves very rapidly and removes the loose particles from the surface. The next operation is to calender the cloth at a very high pressure, or to run it through the hammer machine, which gives greater solidity to the cork.

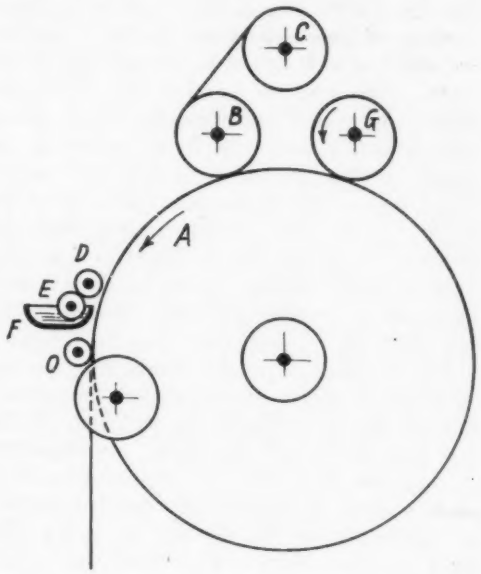


FIG. 1.

2. The Application of Cork in Sheets. The cork used for this operation comes from Corsica, Algeria and Tunis. The blocks of cork must be large enough to enable the sheets to be cut 12 inches long and 8 inches wide. To remove foreign matter from the cork these blocks are immersed in a solution of alkali and essence of turpentine. The vessels in which the cork is immersed are then placed in a chamber under a steam pressure corresponding to a temperature of 250° F. This treatment opens the pores of the cork, which are filled with sand and other foreign material. At the end of several days the blocks are cut in sheets not over 1/25 inch thick. The cutting is done by means of a

small circular saw. The sheets are then brushed and passed through the calender. These sheets, 12 by 8 inches and 1/25 inch thick, are placed in position to form strips and then joined to match the width of the cloth. This is accomplished by means of a special glue consisting of a mixture of rubber and gutta percha. The sheets are then subjected to a high pressure. After drying the strips are rolled on cylinders, a sheet of paper being rolled with the cork to prevent the cork surfaces from coming in contact. By passing through the machine, shown in the illustration, the sheets of cork receive a coating of glue consisting chiefly of rubber, by which it is fastened to the surface of the cloth. The machine consists of a large cylinder, A, which receives the cork sheet. This sheet is unwound from roller, B, on which it was previously rolled, the paper, which has served its purpose, passing to the roller, C. A roller, D, pressing against the drum, A, deposits on the sheet of cork the gum which it receives from another roller, E, which is immersed in the solution in the reservoir, F. Above the drum is a hollow roller, G, perforated and containing in the inside small pieces of cork called "papillons" and which are intended to stop any holes that may be in the cork sheet. By the rotation of the roller which is driven by a belt passing over the pulley, H, the "papillons" are delivered to the drum, A, under the sheet of cork which comes from the roller, B. When the sheet of cork comes in contact with the gum roller, D, the gum passes through the holes and seizes the "papillons," holding them in position. Thus the "papillons" and the sheet of cork are impregnated at the same time, the two becoming one piece, forming one continuous surface to which the cloth is fastened. The roller, B, is revolved by friction with the drum, A. Before leaving the drum, A, the sheet of cork comes in contact with the revolving brush, O, which deposits the gum uniformly over the surface. The sheet of cork thus prepared is ready now to be fastened to the cloth which has been coated with the same gum solution. The cloth and the cork sheet are placed on a table and stuck together, then run at a high pressure through calender rolls heated to 140° F.

This process of coating cloth with cork is known and used exclusively by a corporation known as "Le Tissu Liege," having a capital of 400,000 francs ($80,000), with headquarters and works at Anor, Nord, France. It confines its operations to the coating of such fabrics as may be supplied to it for that purpose. The price for the process is 3 francs per square meter (50 cents a square yard). [We were in some doubt as to the method of applying the "papillons," and wrote our French correspondent, "Gaul," for further information. In reply he states that the process is a more or less secret one and that the account given above is the best obtainable. He adds that the cork lining is also applied by hand, which may account for the high cost of the process. Large samples can be seen at our Boston office. They show conclusively that cloth is lined with cork and very successfully.—Ed.]

## FROM OLD METHODS TO NEW IN THE WEST OF ENGLAND WOOLEN INDUSTRY.

*BY DOROTHY M. HUNTER.*

**From the West of England Woolen Industry under Protection and Under Free Trade.**

At the opening of the 19th century the West of England cloth trade, which had attained to so excellent a fame, was still carried on under primitive conditions.

It was, to a great extent, a home industry. There were manufacturers who carried on a considerable business without possessing any mill at all. A warehouse and office were all they required; each process of manufacture was in its turn carried out in the scattered homes of the workers, and the work returned into the masters' hands, only to be examined, passed, and given out to the next set of workers. Combing, spinning and weaving were all done by hand in the workers' houses. The initial cleaning and picking of the wool was done by women, who,

standing around a wattle hurdle, placed tablewise, and each armed with a long willow rod in either hand, beat on the wool spread out before them, till the locks of wool were disentangled and

the dust shaken out; this was real hard work, and in hot weather required them to strip to it.

How astonished would these poor women be if they could step today into a modern mill and watch the gigantic scouring and drying machines easily disposing of bales of wool under the leisurely eye of two or three laborers!

After the weavers had returned their work it was again given out to women to be burled, that is, mended and the knots removed, and only the finished processes, the milling, dressing, dyeing and final scouring, were performed at a mill. Even the shearing of the cloth after dressing was at this time done by hand shears.

The transition from the home to the factory, from handicraft to machine work, seems to have taken place somewhat more slowly in the West of England than in the North. In Toulmin's "History of Taunton" we read:

> The decline of the Taunton trade must be ascribed in a great degree to the advantage which the manufacturers in the North have derived over us from the introduction and use of spinning machines.

The introduction of machinery certainly seems to have been encouraged with some reluctance by masters and to have met with great opposition by the men.

Thomas Fox, the first of that name to join the firm known today as Fox Bros. & Co., of Wellington, insisted, in 1796, upon introducing into the works the newly invented throstles for worsted and jennies for spinning yarn; but so alarmed were all his elder partners at the intended innovation that they retired in a body. The following conversation is handed down by family tradition:

> "Thomas, it will never do at all; we shall have our places burnt about our ears." "Uncles," replied the younger man ,"you have made your fortunes. I have mine to make, with a young family coming on; you must let me have my way."

It is fortunate for the people of Wellington that the progressive spirit of this innovator has been preserved by his successors up to the present day. The firm is now the largest and probably the most perfectly equipped in the West of England woolen trade.

The introduction of the first shearing machine into a Gloucestershire mill in the early years of the 19th century met with bitter opposition on the part of the workmen, as the following letter will testify:

> Whitehall, Oct. 12, 1802.
>
> Whereas it has been humbly represented to the King that an anonymous threatening letter has been addressed to Messrs. Paul and Nathaniel Peach Wathen, Woollen Manufacturers of Woodchester, in the county of Glocester, of which the following is a copy:
>
> "For Paul Wathen, WoodChester near Strouds Water, Glocester Shear.
>
> "Paul Wathen You hare a Damd in Fernald Scoundrel & We will Teack yuir Damd Life from you if Dont Teack care of yuirself. And Wee Hear in Formd That you got Shear in mee sheens and if you Dont Pull them Down in a Forght Nights Time Wee will pull them Down for you Wee will you Damd infernald Dog.
>
> "And Bee four Alamighty God We will pull down all the Mills That heave Heaney Shearin me Shens in Wee will cut out Hall your Damd Hearts as Do Ceep Them and Wee will meack the rest Heat them or els Wee will searve them the Seam.
>
> "Thear Read This and Weep Do you For your Time is but Shourt Hear your Damd Villian Raskell."
>
> His Majesty, for the better apprehending and bringing to Justice the Persons concerned in writing and sending the Letter above mentioned, is hereby pleased to promise His most gracious Pardon to any one of them (except the Person who actually wrote the said letter) who shall discover his or their accomplice or Accomplices therein, so that he, she or they may be apprehended and convicted there of. Pelham.
>
> And, as a further Encouragement, a Reward of One Hundred Guineas
>
> Is hereby offered by the said Messrs. Wathen to any Person making such Discovery as aforesaid (except as in before excepted), to be paid on the Conviction of any One or more of the Offenders.

The process of carding was the first in which hand labor was very generally superseded by machinery. The original hand-card was a small wooden-backed brush set with teazle-heads; after a time the teazles were replaced by short wires driven through leather or cloth. Later this wire-studded cloth was fitted on to a series of rollers, between which the wool passed as through a mangle. The rude machine thus constructed, driven by horses or water power, was that commonly in vogue at the begin-

ning of the last century. The modern carding engine works on the same principle, and is an elaboration of the original machine.

The growing use of machinery soon necessitated the erection of mills. In the Stroud valley many mill buildings are still in use which date from the early years of the 19th century. One of the largest mills in the district, a handsome and imposing pile of red brick now belonging to the firm founded by Sir Samuel Marling, was built about the year 1813. The majority of the old mills are of more modest proportions, and built of the stone of the country.

Steam engines appear to have been introduced into Gloucestershire mills about the year 1815. They were for a long time used to supplement water power during the summer months only, but in consequence of their superior power and greater regularity of action they gradually superseded the water-wheel, which is now relegated to the roll of an occasional auxiliary.

In the Somerset mills the introduction of steam power was later than in Gloucestershire. At one important mill, at Twerton, near Bath, the waters of the Avon still provide the main motive power.

The weaver was the last of the cloth workers to be driven into a factory. Many mill men still living remember the days of the old hand-loom weaver; remember seeing him carrying his work to and from the mill, or hearing the cheerful clatter of his loom as they passed by his cottage. On the Cotswold Hills there are hundreds of cottages containing a room a little larger than was customary in the ordinary cottage of the day, and lighted by a broad window. These rooms were built to accommodate the loom which was the means of livelihood of its owner. Not infrequently a cottage contained two looms, several members of the family assisting in the work. There were also many master weavers, each with a small workship, where sometimes as many as half a dozen apprentices or journeymen were employed.

About the year 1830 the manufacturers began to fit up weaving sheds of their own, where the work could be done under their supervision. This led to the introduction of the power loom, which finally displaced the old weavers. The change was, however, made gradually. In Gloucestershire certain cloths were still frequently woven by hand in the 'fifties; at Wellington it was not until 1852 that a power loom was used.

With the general adoption of the power loom and the introduction of combing machinery by the Somersetshire serge manufacturers, about the year 1856, the final stages were accomplished in the concentration of the woolen industry in the factory, and the substitution of mechanical for muscular force in every department of the industry. It remained to improve and elaborate the machinery brought into use. That was the work of the latter half of the 19th century, a work which still continues, and which has probably already accomplished as much in increasing the productive power of labor as did the original transition from hand labor to the use of machinery. The hand loom differs less from the first simple power loom on which the broad cloths of the West of England were woven than does the latter from a modern fast fancy loom, with its many harnesses and its shuttle flying back and forth to every tick of the clock.

## THE NATIONAL ASSOCIATION OF COTTON MANUFACTURERS.

Secretary C. J. H. Woodbury of this Association announces that the 89th meeting will be held at the New Mathewson House, Narragansett Pier, R. I., on September 21 and 22. A special train of Pullman cars will leave Boston at 1.03 P. M. on Tuesday, September 20, and a lunch will be served on the train immediately after the departure. Special cars will leave New York at 10.02 A. M., arriving at Narragansett Pier in the afternoon.

The total number of persons engaged in the textile industry in Germany in 1909 was 1,088,280.

There are now 50 jute mills in India containing 562,300 spindles, 27,200 looms, and employing 187,800 persons.

## THE POLISHING OF YARN AND SEWING THREAD.

*BY ANTRIM.*

The primary object of glazing or polishing threads is to get a smooth finish and to eliminate all loose fibers from the finished material, and also to stiffen and strengthen the thread by the same process. It is plain that if all the fibers which enter into the thread are packed together and held in that condition by the sizing or polishing substances that we will get the full strength of each individual fiber. The yarn gains from 15 to 20 per cent. in strength in the process of dressing, and also from 10 to 15 per cent. in weight on blacks, and from 7 to 10 per cent. on whites and colors. If a certain count of dressed yarn is needed for any purpose, allowance must be made for the increase in the weight of the thread. If yarn is bought in the grey and dyed, then put through the dressing room and sold again, the increase in weight will offset all cost of labor connected with the process, and still leave a balance to the good.

The sizing used varies in different mills, but all have the same object, a smooth finished thread, an increase of weight, and a polish more or less pronounced.

There is a large variety of materials used in the trade, but all with the same object, weight and polish. Some mills used soap for their softening; others, tallow, stearic acid and various oils. Nearly every dresser claims to have the best mixture obtainable. If the properties of the size are investigated, many of the differences that seem important to the novice will be found of little importance.

I have used a great many preparations, but the real standby, and one that can be relied upon to produce the same results every time, is good potato and corn starches, rye flour and paraffine wax, with a little glue added for stiffening purposes. If I need a good hard finish, I prefer to use the corn starch. The corn starch granules are of a far smaller size than the potato and consequently have more penetrative power. Corn starch also boils into a far more liquid condition when hot than the potato starch does. For a medium or soft finish I use the potato starch with a little more softening in the boil for a soft finish. A good formula for 2-ply yarns is as follows:

For 65 gallons:

20 lbs. potato starch.
5 lbs. rye flour.
1 to 2 lbs. paraffine wax.
½ lb. pulverized glue.

For a hard finish substitute corn starch for the potato and add 1/2 lb. more glue. For a soft finish add 1/2 lb. stearic acid, 1 lb. tallow, or a bar of common soap. Many oils can be used for softening. If the size is to be used for white or colored yarns

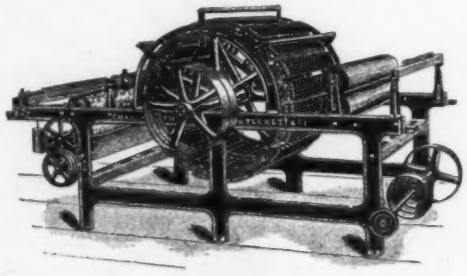

FIG. 1.

use cocoa-nut oil. If the size is not to be used quickly add 2 ozs. of copperas to each tank to prevent souring.

The wax and glue are boiled together with a couple of gallons of water until thoroughly dissolved. The tank is then filled two-thirds full and the starch which has already been dissolved in cold water is entered. While the mixture is being stirred the flour is sifted through a fine mesh sieve into the solution, which is continually stirred with a wooden paddle until it boils. Boil 10 minutes. In using this mixture dilute with 1 part of hot water to 2 parts size, which puts the solution in good liquid condition for the size box.

To get the yarn in good condition for dressing, care must be taken in the spooling room that the traverse of the bobbin is completely and evenly filled. The tension of the

yarn itself will pull the spool around in the creel without the yarn running under at the ends of traverse. There is a certain amount of drag on the yarn from a V creel every time it travels to the inside edge of the spool. If the spool is not filled evenly the yarn will snap off. The exercise of a little care in the spooling room prevents a great deal of breakage of ends and waste of yarn in the dressing room.

The dressing machines are of three types.

In the dyeing and dressing of the yarn there usually occurs a gain of 10 to 12 per cent. in weight, making a total finished weight of 440 lbs., which at 32 cents a pound would amount to $140.80. This is a clear gain of $12.80 in the finished yarn alone, plus the usual profits in the dyeing and dressing operations.

The regular type for the thread and polished yarn trade is the double brush machine, Fig. 3, which is suited for the heavier

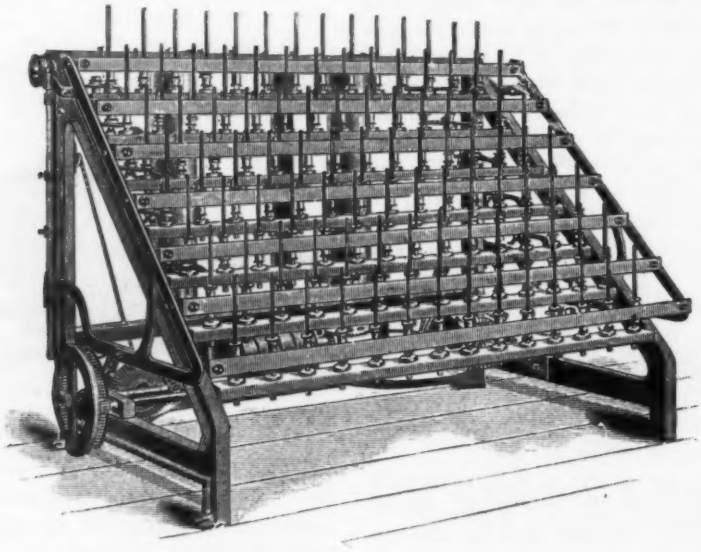

FIG. 2

The single brush machine, Fig. 1, is used for fine yarns which will not admit of much tension, nor much brushing of the yarn itself. The brushes on these machines are made in lags or strips the width of the machine, each lag being 4 to 5 inches wide on the face of bristles. A soft pliable bristle is generally used on the single brush type and also on the 2 and 3 brush machines if they are intended to run single yarns, otherwise a coarser and heavier grade of bristle is used.

Take for example a bale of 400 lbs. at the present price of 22 cents:

| | |
|---|---|
| Yarn ..... | $88.00 |
| Dyeing at 4 cents ..... | 16.00 |
| Dressing at 6 cents ..... | 24.00 |
| Total ..... | $128.00 |

varieties of yarns such as coarse singles and 2, 3 or 4 ply. For yarn over 1/30 I would prefer the single brush machine, and for extra high polish the 3 brush machine.

The two brush machine is almost wholly used in the thread business. This machine usually has 98 spindles. There is a creel holding 98 spools with the brush frame between, and then the take-up of 98 spindles. The takeup part of the machine, Fig. 2, consists of seven banks of spindles, starting at the bottom bank. Each row is set back a little more than the diameter of the spool, in this case about 4 1/2 inches, so that the top row of spindles stands back two feet farther from the machine than does the bottom row, leaving plenty of room for the operator.

In commencing to thread this machine, the operator starts in the center of the machine, taking the central spool of the yarn he is about to dress. He finds the central screw eye or guide on his machine, which would be the 49th from the end eye, carries the yarn under the bottom size roll and up between the rolls, thereby squeezing out any superfluous size, then over the grooved guide rolls and brushes to the take-up.

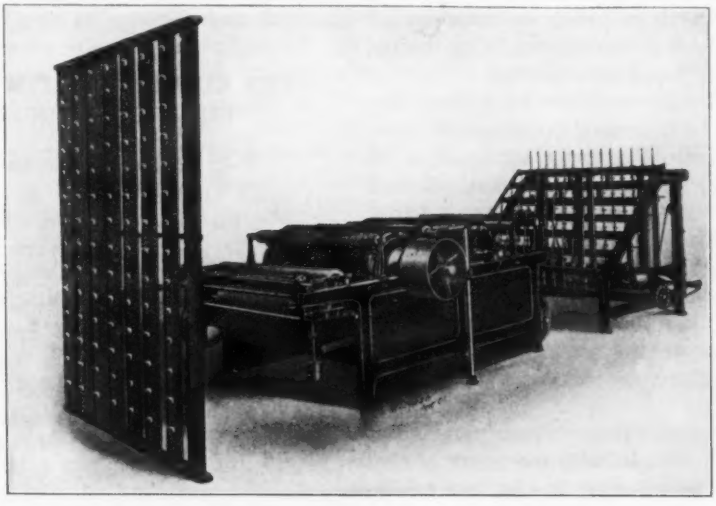

FIG. 3.

Here he takes either the top or bottom spindle of the seventh row, works up or down, and follows the line of spindles he started with to the last one. Threading the next one on the same bank, he takes that row down, working from top to bottom and bottom to top rows until all are filled. This method of threading allows the operator to reach any spool of the 98 without disturbing the others.

The spindles are driven by a long band carried once around the cylinder and to the spindle, then back to the cylinder, and around No. 2, until there are seven spindles on the same band, or half of one bank of spindles, two cylinders being used to drive the full number of spindles.

The whorls of the spindles being set so that each successive band is a little higher than its neighbor, the band runs around the cylinder for each spindle, giving plenty of tension on the yarn. The tension on these bands can be adjusted closely, by an idler, on a thumb screw, working to and fro in a slide, allowing the operator to tighten or slacken each individual band as required as the spools get heavier and consequently require more power to drive them.

The brushes should be run at about 375 to 400 revolutions per minute. As the brushes are 18 inches in diameter, that speed will give a polishing surface speed of 1800 feet per minute. The yarn is in contact with the brushes for a space of 9 inches, and the amount of polish obtained depends on the speed at which the yarn travels over that distance. If, however, the yarn runs through too slowly, the bristles will begin to brush the fiber away, destroying the polish. The materials used in the size are brushed off the yarn that is carrying them.

It is the usual practice for a dresser tender to run three machines of 98 spindles each. If a machine is equipped with a V creel, it is usually counted as two. A V creel is set in the shape of a letter V, the

apex of the V being in the center of the feed rollers, and holding 98 spindles on each side, for the purpose of dressing two ends together. This is generally done at the expense of the polish unless the three brush machine is used, when the two ends can be thoroughly dried and polished.

The two ends going through the size box side by side carry a large amount of moisture. On a two brush machine this increases the difficulty in drying the yarn thoroughly, making it necessary to keep the temperature of room well above 100°. I prefer to use a three brush machine on all two end polishing, thereby getting better results, and far less waste of yarn.

On a two brush machine the yarn is apt to be damp, and then as it dries on the spool it becomes matted into a solid mass of yarn and size, which must be cut off and wasted. The three brush machine prevents this waste and also requires less attention.

The temperature of a dressing room ought not to be below 100° to get full production from the machines. This heat is necessary because the yarn must be thoroughly dry before reaching the spools on the take-up.

The production from these machines varies widely in weight with the count of the yarn, but the length that is run can easily be computed. I generally reckon on one pound of 2/20s per spindle for a ten hours' run. The weight for other counts can be estimated in proportion.

When a thread breaks it will wrap itself around the grooved rollers or the brusher. Care must be taken in removing them. Threads on the brushes should be held by means of a piece of coarse card clothing set with about 36 teeth to the inch, three to four inches long. The teeth should not project more than 3/16 of an inch. It should simply scratch the surface of the brushes, catching the broken threads, which the operator can clear away. These cards should be used by hand, and never fastened on wood or any other material, as that destroys its elasticity, and causes more force to be used than necessary to clear the broken ends, rapidly ruining the brushes by breaking off and tearing out the bristles.

I recall the manager of one mill who complained of the rapid wearing away of the brushes. On investigating the case we found one dresser tender using a large curry-comb on the end of a broomstick; another one had a flat piece of wood with nails driven through it for teeth. When these tools were used the broken bristles could be seen flying out. Such methods will ruin the best set of brushes in a week. Care should also be taken in cutting the broken threads from the rollers. Frequent sand papering and coating with shellac will keep the rollers smooth and clean.

## THE ELEMENT OF TIME IN THE FINISHING PROCESSES.

*An address by E. H. MARBLE before the Alumni Association of the Lowell Textile School.*

Do we in this country recognize the full value of the element of time in our finishing processes? While each of the different steps in the process of finishing has its important bearing on the result, the waits between the various steps are full as important as the steps themselves, and more than that, during those waits it is not unlikely you may, by errors of omission or commission, make the entire process a failure. Should you neglect to recognize those waits, you fail to obtain effective and permanent results.

Not long ago I saw a piece of fair quality black overcoating. It was waiting on the floor for some one to do something. It was wet, warm and soapy, from the process of fulling. Its bottom folds were badly wrinkled by the pressure of the greater body of the wet fabric, and the doubled ends of the other folds, as well as the top layers of cloth, were resting quietly under the magnified and intensified rays of the sun, shining through prismatic glass in the transom. Would any of you expect to find a perfect piece of fabric, devoid of mill wrinkles and brown or burnt color spots? It wasn't part of the outlined process to have these effects, but while the cloth was waiting the villain entered, or rather between the acts he made the plot a farce.

In the matter of steaming, the element of time is not considered of much importance.

Let us see about this. A piece of olive drab uniform cloth of foreign make was considered by the U. S. Quartermaster's Dept., far superior to any of domestic manufacture at a corresponding price. An employe of the foreign firm that furnished this fabric was kind enough to give facts which seemed to him to be the basis of the selection. Given the same organization, stock and weave, the foreign fabric would be subjected to steaming and brushing not less than four times, with the goods waiting between each steam brushing several hours. The steam vapor was well brushed in these several times, and the goods placed on a roll until the effect of the steaming had set the finish. One of his statements was that "steam will not set a fabric of this weight and character under 2 1/2 hours, and four hours make it nearer a certainty," also a rather colder steam, or rather a less excessively hot steam, is more satisfactory in its action.

With the increased use of the spray in finishing, this process might well be considered in connection with our subject. Now I am a very firm believer in the use of water in finishing, and warm, or moderately hot, is nearer to my fancy. It may be a little moisture applied in the form of spray or dew, or it may be a complete saturating of the fabric, by submerging and then partially forcing the water through the fabric by means of squeeze rolls. Water properly applied is the finishers' best friend.

But we have departed from our spraying. To a 16 oz. piece of woolen, 60 in. wide, you add 1 oz. of water; let us figure this out; 2,160 square inches of fabric over which you spread 1 1/2 cubic inches of water in small drops or particles, which when evenly distributed amounts to about 8/10ths of a thousandth of an inch in thickness. Now this minute thickness of film is not uniform; it is just a number of little balls or globules, and to thoroughly distribute these globules, they must be broken into still more minute ones.

Roll the goods smoothly and not too snugly after spraying. Allow this little film of moisture to permeate the piece so that each fiber is acted upon by the water. Each individual fiber has considerable affinity for water, and will aid you to distribute the moisture thoroughly, if you will allow it time to do so.

How long a wait must be allowed?

This is a hard question to answer, as the grade and freedom from oil of the wool, the structure of the fabric, and the repellant or non-repellant value of the dye, all have an influence on the degree of absorption of the moisture. A certain shrinkage property also enters into this treatment. An old manufacturer once told the speaker that he liked the tenter bars because they prevented shrinkage of the fabric while drying, but at the same time he mentioned the fact that if he could only shrink his goods flat, by any other method, he would pitch out the tenter bars very quickly.

A little examination of the fabric, and a few experiments, will answer this question better than any theoretic figures.

Now let us pass to another step in the finishing process, the pressing of the fabric. The plate press was the only apparatus known in early days in this country and is found occasionally in a mill today, but it is very largely used abroad, especially on finer fabrics. A pressure of 15 to 18 tons per square inch applied for about eight hours was the usual practice and the fabric was thoroughly and permanently set. A pressing that was forced through and through the fabric—480 minutes of continual pressure. At the present time a rotary press is expected to turn out about 6 yards per minute, that is, unless it has been speeded up to 9 or 10 yards per minute. A cylinder 15 in. in diameter with theoretically 36 in. of pressing surface, though practically it has not over 26 or 28 inches of evenly applied pressure, this pressure often exceeding 30 tons per square inch, 216 in. per minute travel of cloth, each line of filling is under pressure about 25 seconds. Now you do not expect to equal the plate press in effect, of course, but just expect to give a commercial substitute for its results.

I think I hear one manufacturer say, "We

can't afford to spend so much time." Have I not the privilege of answering, "You can't expect to compete then?" These commercial substitutes are very evident in our American mills. We submit commercial substitutes for the old logwood, indigo, cochineal, Turkey red and other old dyes, and commercialism says they are all right.

Pressing consists of two steps; first, moistening the fabric, either by spraying or by a vapor steaming process. This softens the fabric a trifle. This moist fabric is subjected to heat and pressure. The heat converts the moisture within the fabric into steam, heating, perhaps superheating, the steam already in the fabric, and the fabric is given a rather severe, spasmodic squeeze, and then you let the whole matter drop. Just imagine subjecting a lady to such treatment. Would you be startled if you were declared a brute? Had some of your cloth the power of speech I think it would declare against such brutal treatment. Give me a good, old-fashioned, long continued squeeze upon the cloth, either in the piece, or on the person.

In regard to the cloth pressing in the piece, let me suggest a little more careful examination and adjustment of the conditions; a little less heat in the pressing surfaces, a little better use of moisture to the fabric and a considerable longer application of the pressure, then wait a little for the result to set. The difference between the action of a press running 6 yards per minute, every pressing surface at an extreme heat, and the same press with the beds well warmed up and the cylinder only warm from the radiated heat from the beds, with a cloth speed of 2 to 2 1/2 yards per minute. I said the difference, but I wish I had samples to show you. You don't need to be convinced; I think you are already convinced.

In regard to this setting, it may be accomplished by rolling the fabric while still warm, without undue strain or tension, and allow it gradually to condition or mellow. This is a case where between the acts you can enjoy, in prospective, the completed fabric.

A few words about another process, as so much is being said today, about shrunk fabrics. I am not going to discuss steam shrunk, London shrunk or decatized fabrics. Remember that it is not the wetting of the fabric that shrinks it, but the drying out of the moisture gives you the result. I did not say the desired result, because when the drying is forced or the fabric restrained, the shrink is not what is desired. If you force the result you fail to allow the element of time to enter into the process, and if you restrain the shrinking, it is possible that you will hear from it later.

Imperfect wetting out, that is, wetting in spots, gives you a mottled shrinkage, and is the cause of some of the wrinkled effects seen in ready-to-wear fabrics, while good wetting out and undue heat in drying does not allow the different fibers a chance to return to a natural condition. An attempt to obtain the result of a permanent set to the fabric by means of dry steaming, while the fabric is tightly rolled, gives an entirely different effect. The severe steaming has a tendency to shrivel the fabric rather than shrink it, and though it gives you a luster and finish that will even withstand the action of the tailor's iron, you have accomplished not a perfect shrink, but a partial shrink and temporary shrivel.

I saw some goods that were subjected to this dry steaming process, and they reminded me of a rather finely woven straw matting in feel and shine. For any lively wool fiber that has been treated to excessive steam heat, has been converted into a liveless, oilless strand that resembles a manila fiber more than the original, a soft, lustrous, curly hair, that was given to you to work with.

You have, during the process of manufacturing cloth, subjected the wool fiber either as an individual hair, as a strand of yarn, or as an organized fabric, to greater or less strain, at times to an excessive strain and distortion. It naturally tends to resume its natural condition as far as the construction of the cloth will allow. If you destroy the life of the fiber by heat, either dry or moist, it has no natural condition to return to. If you have been gentle to the fiber, though perhaps distorted or strained unduly,

it still seeks its place of rest and quietude. Do you wish to aid it in its efforts? If so, apply water in sufficient quantity to saturate all portions. Warm this water so that you will arouse no thought of a chilly treatment. Gently press the moisture in to the structure so that all portions may receive it equally. Hang the fabric where the air will gradually absorb the moisture as it is given off from the cloth, and when almost dry, subject it to just enough ironing without strain or tension, to smooth out what little wrinkles are formed and allow a little extra time for nature to aid you by conditioning the fabric, and she can do it much better than you can. The result will be both gratifying to the eye and to the pocket book. Perhaps the most pleasing wait will be that between the passing upon a splendidly equipped fabric and the gratifying report from the satisfied customer.

Now a personal word to the graduates. Thirty-six years ago a gathering was held in Boston known as "The World's Peace Jubilee." Great Britain sent its most famous musical corps, the military band of the Grenadier Guards, better known as Dan Godfrey's band. As this body of men marched onto the platform, the scarlet coat and towering black bearskin hat set off to the best advantage the splendid physique of the men. Such brilliant scarlet is not seen today and I do not know of any similar fabric being produced in this country. Cochineal dye, steam finished, London shrunk. It took time to produce such a cloth; the fabric woven in the white was ready for the dyer and finisher just eight weeks before the goods were delivered to the tailor. Eight weeks from loom to case; every step in the process through which the fabric passed was watched and hastened. Without detailing them, let me state that six to seven applications of steam brushing, twice London shrunk, twice plate pressed, and then pronounced satisfactory.

Eight weeks in the works and yet you say the element of time is of little value in the finishing room. I do not expect to see this fabric duplicated. I doubt if we have any call for such duplication in this rapid age, but we have a call for more consideration of that element, time, which I have endeavored to impress upon you as one of the greatest essentials of the best finishing. No better practical illustration of a paraphrase of the saying, "The greater haste, the less finish."

Now this is not a piece of one of those uniforms, but it is a piece of a similar fabric made by the same firm a few years later, about 32 years ago, and I have other samples of about that time, all possessing, after all these years, that brightness of color, lustrous surface and mellow yet firm feel. Are we to admit that they, in our fathers' day, were better equipped than ourselves? My impression is that they better knew the value of time. It is quite possible that another feature, not a process, has had something to do with our present conditions,—the element of name. Today little attention is given to the reputation of the mill that produces the goods—you don't even know that name; in many instances it has no meaning to you. Many commencement speakers have emphasized the value of a name. There was a time when Talbot, Washington, Sawyer, Middlesex, Globe, Germania, Rock, Hockanum or Slater, seen upon a piece of fabric was satisfactory guarantee that the fabric was of its class the best, and while many of those mills are still producing a splendid fabric, yet rarely do you see the mill name in print. If it's a good thing, advertise it—give it its particular and valuable asset—a name. In a list of twenty-four clothing advertisements, I found but one mill name,—"Talbot."

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There are 414 factories in Russia engaged in the flax, hemp and jute industries, with an annual production valued at $36,050,000, giving employment to 52,000 persons.

Over 26,000,000 yards of carpets are produced in the United Kingdom in the course of a year, valued at about $17,500,000.

The number of spindles in Russia increased from 7,500,000 in 1900 to 8,076,000 in 1909, or 8 per cent., and the quantity of cotton consumed from 1,350,000 bales to 1,514,000 bales, or 12 per cent.

## A BRADFORD WOOL AUCTION.

*BY WESSEX.*

Compared with London auctions the wool sales held periodically in Bradford are quite unimportant affairs. But the stranger had a fancy to see one and on Thursday, which is Bradford's principal market day, I took him in. Business had started and as we crept unobtrusively up an aisle and occupied seats at a remarkably pew-like desk the man confided to me that never had he seen the wool business looking so much like church. Except for the hats and the tobacco smoke it is altogether a church impression that the assembly gives. Two or three hundred were present, some standing in a sort of gallery and the auctioneer, a deputy and a clerk by his side, faced them from a platform behind a green baize table. The auctioneer was talking rapidly and nothing would have seemed more natural than to hear him announce the number of the hymn.

Still it was wool that was being sold—to wit:

800 packs fleeces, skin wool, etc.
150 packs Botany laps and spinning waste.
250 packs waste and sundries.

1,200 packs (nominally) without reserve.

They had been on view in warehouse until the sale opened and the prospective buyers had their catalogues marked with their individual limits, and slips of paper on which to note the purchases. A glance round showed the presence of a good many dealers, a number of small woolen manufacturers from Huddersfield and vicinity and representatives of some large top-making houses, who were perhaps looking out for cheap lots to blend into that complex compound, a Bradford top. Roose & Ruthven hold such sales monthly and they bring together a variety of odd lots. T. A. Firth's promote about eight sales a year and bring forward larger and more regular lots.

The buyers are attracted by hopes of something cheap. Not here do frantic buyers run up the price for all the wool of the season. I am informed that special measures are taken without leave to make lots cheap. My companion had wondered why a person at the viewing of the wool had surreptitiously mixed a handful of lower stuff with the material uppermost in one of the bales. The accepted explanation is that this is done to ward off other bidders who may thereby be led to undervalue the goods. The lots are small. Plenty of them are of one or two sheets only. If there are twenty bales of a sort the auctioneer allots them into two tens and where there are sixty or seventy bales splits them into twenties or so.

The buyers want something cheap and when the seller suggests sevenpence as an appropriate starting point he gets perhaps an answering shout of "Five." There are echoes of "Half," "Three," "Six," "Quarter," and so on round the room and the hammer goes down possibly on a bid of sevenpence halfpenny. My American friend found the contractions confusing. I had to explain that this is the Bradford way of advancing by cents and half-cents (farthings). Now and again there is a shriek, or just as the hammer is descending somebody thrusts forth an arm and pops in dexterously a higher price. On the whole the transactions are done coolly and when the auctioneer protests that the last price is a penny below the reserve and real value the bidder is ready to say that the reserve price is just that penny too much.

Sort follows sort in quick succession. Now there is a lot of dyed tops which the room suspects has been damaged in dyeing. There follow slipes from New Zealand, Blackfaced, Down and Dorset Horn wools. The selling passes to wastes. Offerings of laps and spinning waste alternate and so business gets gradually down to lower and lower sorts. The assembly breaks up to go back to the Exchange, the buyers wondering what the purchases will look like on their own warehouse floors. The lots are bought with all defects upon them and prove sometimes better and sometimes worse than anticipated. To the price per pound has to be added the cost of bale-sheets (shown in the catalogue), cost of cartage, and interest for paying spot cash. These make an appreciable addition and taken with the fact that the auctions are held amid large private stocks that can be bought at full rates, one can see why Bradford auctions tend rather to be a buyers' than a sellers' market.

# Correspondence and Notes

UPON TEXTILE TOPICS AT HOME AND ABROAD

## PLAIN VELVETS.

*BY GAUL.*

(Translated from the French by the Editor of the Textile World Record.)

(Continued from June.)

### QUADRUPLE PICK VELVET.

Weaving four picks between each rod is a method used but very little outside of the silk industry. Fig. 14, A to I inclusive, shows the various ways in which such a weave can be arranged. As has already been explained, form I is similar to H, presenting an iron bed of one pick after the passage of the rod. This arrangement has not much to commend it because of the difficulty of holding the rod in a vertical position. Weaves, K to R inclusive, Fig. 14, show various applications of the stitchings, A to I. The weave K is used for the manufacture of a boucle velvet, while the last weave, R, shows the pile with the stitchings, H and I. These examples could be extended indefinitely. From what has preceded it will be understood that the number of stitchings for the pile threads is very limited, but that they can be combined with an indefinite number of ground weaves. As the ground weave does not affect the appearance of the cloth, only a very small number are used.

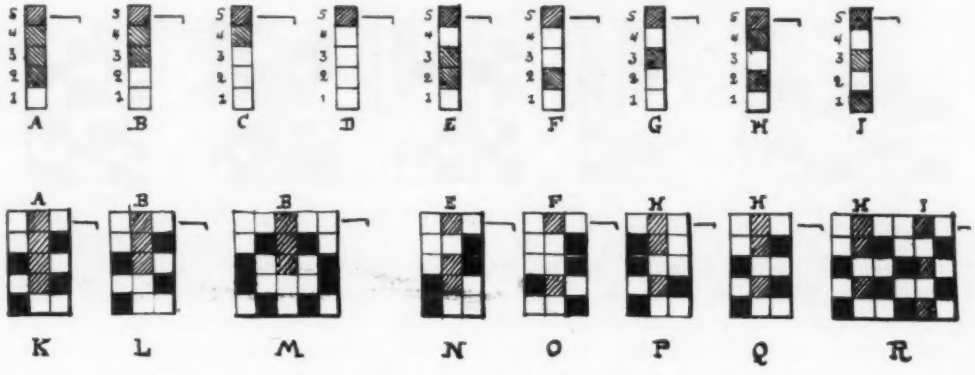



FIG. 14.

### PLUSH.

Plush differs from velvet by reason of a longer pile and occasionally by the irregularity of the tufts. As we have seen, all the pile threads in a velvet are raised when the rod is inserted, while in a plush only half of the pile threads are raised above the rod.

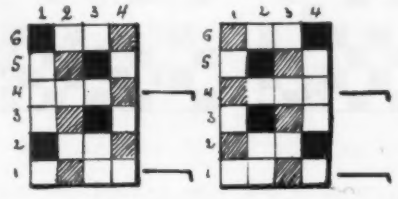


FIG. 15



FIG. 16

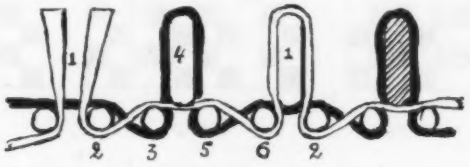



FIG. 17

This constitutes the characteristic feature of plush fabrics. In a velvet all the tufts are aligned with the same picks. This is made apparent by folding the fabric in the direction of the filling, which makes the mark of the rod apparent. In a plush fabric, on the

contrary, the tufts are arranged in quincunx form, the object being to cover the ground work more completely. The weaving of a plush fabric usually requires 3 warp beams, one for the ground warp and two for the pile warp. At times, however, all the pile warp having the same take-up is put on one beam, but are separated by slackening rods which operate alternately.

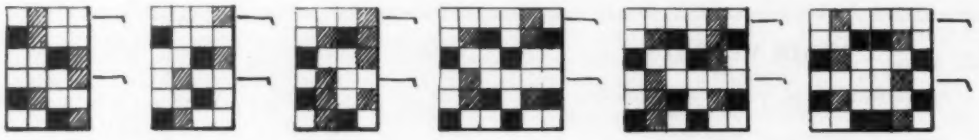


FIG. 18 FIG. 19 FIG. 20 FIG. 21 FIG. 22 FIG. 23

Plush and velvet fabrics are constructed on the same general principles and we will content ourselves with giving a few drafts of the most generally employed weaves. Fig. 15 is the draft of a mohair plush which is sometimes improperly called "utrecht" velvet. The ground warp is single linen 22s to 40s, according to quality. The pile warp is mohair, 24s to 60s. The filling is single cotton, 8s to 26s. The warp is dressed 1 ground thread, 1 warp thread. The filling is woven 2 picks to 1 rod, with 28 to 60 rods to the inch. For low grade goods cotton is used in place of the linen for the ground warp, and worsted is substituted for the mohair. This class of goods, used for upholstery, is made from 28 to 56 inches wide, the pieces being 40 yards long. The linen warp is usually colored blue, the filling being blue or red. The mohair is woven in its natural color. The ground fabric, composed of vegetable material, constitutes a background for the color which is eventually applied to the pile.

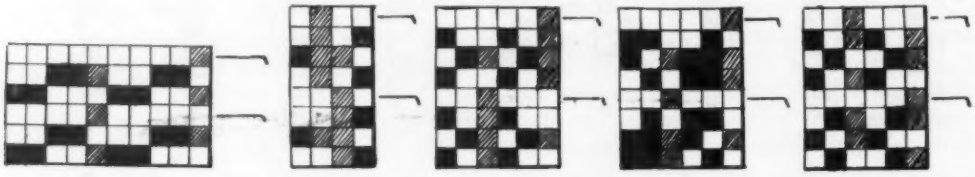


FIG. 24 FIG. 25 FIG. 26 FIG. 27 FIG. 28

Fig. 15 is employed exclusively for hand weaving. One ground thread and one pile thread are drawn in each dent of the reed.

Fig. 16 shows a draft which is used for power weaving and corresponds with Fig. 15. The warp is reeded 1 pile thread, 1 ground thread in a dent. In this way the deflection of the pile toward the right is avoided when the rod is withdrawn from the fabric. Usually this cloth is woven with 3 rods, the filling being wet.

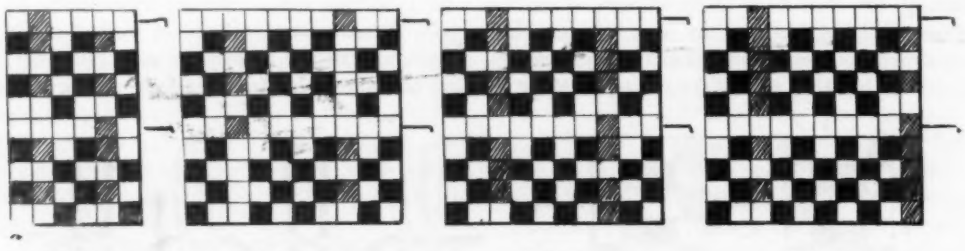


FIG 29. FIG. 30 FIG. 31 FIG. 32

Fig. 17 shows the longitudinal section of the cloth. It will be noticed that both the

pile threads intersect as shown at E, Fig. 14.

Utrecht velvet is finished in various ways to correspond with the uses to which it is to be put. The finish can be with the pile erect or pressed down. By the last named method the cloth is wound tightly on a perforated cylinder and steam is blown through the goods. An astrakhan effect is imparted by crumpling the cloth and tying it tightly with twine. The piece is then placed in a sack and boiled in water for two hours.

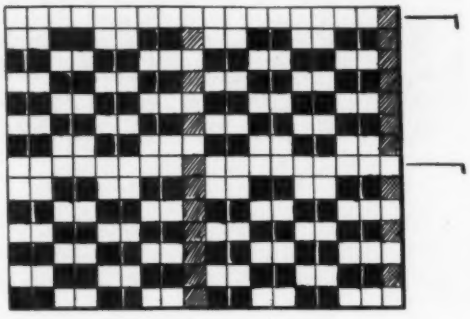


FIG. 33

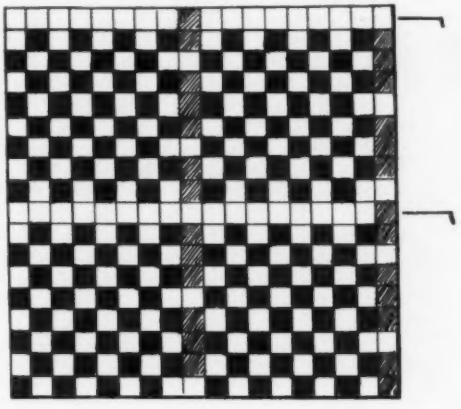


FIG. 34

Frequently Utrecht velvet is simply exposed to the pressure of engraved rolls in order to produce a design.

Fig. 18 shows a draft used in the manufacture of moquette carpet. The pile threads are woven regularly and the ground is a plain weave.

Fig. 19 shows the weave in which the ground is a rib, the pile being tied tightly by an iron knot.

Fig. 20 shows the same ground weave as in Fig. 19, but the pile is stitched by an iron bed.

Figs. 21 to 23 show weaves for fabrics in which the warp is dressed 2 ground threads for 1 pile thread. The ground weave is plain in Figs. 21 and 22, while in Fig. 23 it is a panama weave.

Fig. 24 shows 4 ground threads for 1 pile thread. In order to have the pile cover the ground fabric it is necessary to use a very high rod or a very fine yarn for the ground.

In the weave shown in Figs. 25 to 28 there are 3 picks for each rod, the draft covering 8 picks. In Fig. 25 the warp is dressed 2 ground threads and 2 pile threads, the ground being woven with a rib.

Fig. 26 shows a rib ground, the pile threads being tied by an iron bed.

The ground in Fig. 27 is woven with a broken twill, N, Fig. 13.

Fig. 28 is woven with a plain ground. Weaves with 4 or more picks for one rod are used to a small extent for silk plush for hats and for imitation astrakhan.

Figs. 29 to 34 show several weaves for astrakhan plush, all being regular except Fig. 32, which is an irregular weave. Following is a lay-out for astrakhan plush made with the weave shown at Fig. 29: Reed 870 dents in 55; 25 picks to the inch. Rod from .3 to .4 inch. Ground warp, 1,340 ends, 2/40s black cotton. Pile warp, 640 ends, 2/8s mohair. Filling, single No. 8 black cotton.

(To be continued.)

The value of cotton manufactures exported from the British Islands is about $500,000,000 annually, and there are about 500,000 persons employed in that industry.

In England, on an average, men make about $8.30 a week and women about $4.56 in the cotton trade, and about 75 cents a day less in the woolen and worsted industry.

## NEW STYLES FOR COTTON FABRICS.

*BY J. W.*

Fig. 17 is a design for "Honeycomb" Spotting which is a popular weave for spring and summer in cheap vestings. The marks

FIG. 17

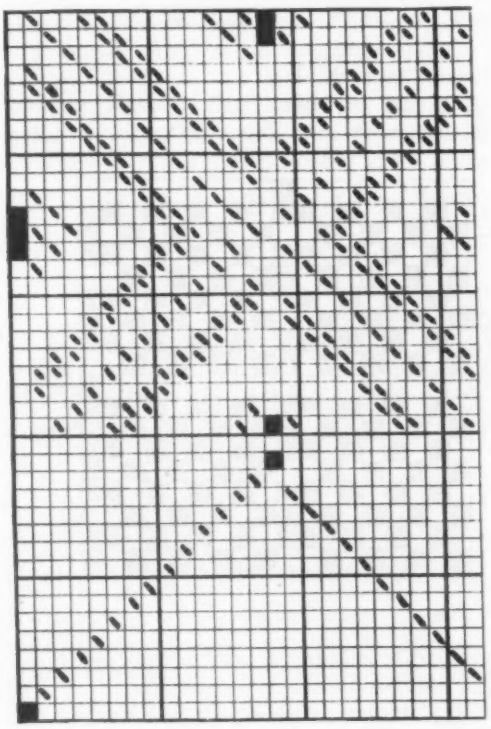


FIG. 18.

on Fig. 17 are for white threads; the heavy squares for colored threads.

Fig. 18 is the drafting for the heddles, 15 being required. The particulars for this cloth are: 36 dents per inch, 2 and 3 threads in 1 dent, 16s warp and 48 picks of 10s for the filling. The designs most required are white ground, colored spot and slate, fawn, cream, light blue and black for the filling. Colored grounds and white spots in dark colors are also desirable.

Fig. 19 is a design coming to the front for cotton costume cloths. The crosses indicate light color and the heavy squares mercerized cotton. By drafting, this design can be woven with 9 harness. The particu-

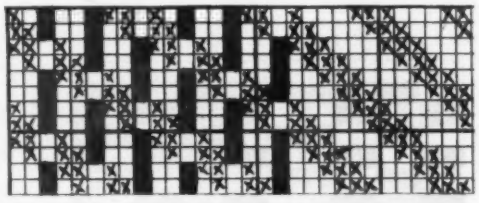


FIG. 19.

lars for manufacture are: 32 dents per inch, 2 and 3 threads in 1 dent, 18s and 2/40s mercerized for warp, 48 picks per inch of 12s for the filling.

WARPING AND DENTING PATTERN.

| | | | | | |
|---|---|---|---|---|---|
| 12 Threads | | Cream | = | 6 dents | = 18s. |
| 1 | " | Pink Mercerised | = | 1 dent | = 2/40s. |
| 2 | " | Cream | = | | = 18s. |
| 15 | " | 5 repeats | = | 5 dents. | |
| 30 Threads | | | | 12 dents | |

Some very effective stripes are being woven at present with twill ground and mercerized figures for a good class shirting.

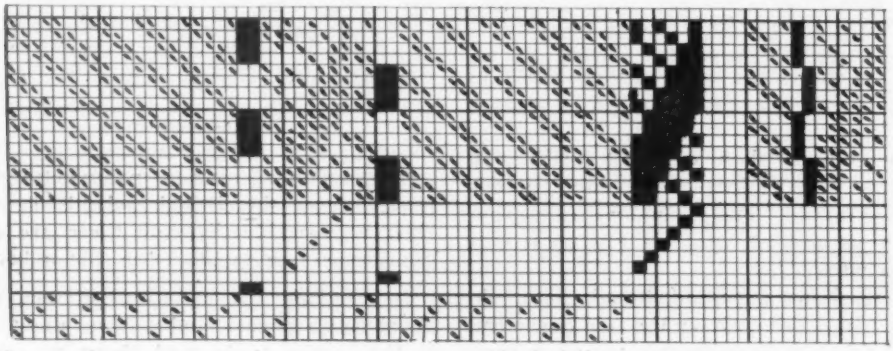


FIG. 21. FIG. 20. FIG. 22.

Fig. 20 is the design for Fig. 20A, Fig. 21 the drafting for the heddles, and Fig. 22 is the dobby plan for 12 harness. This style is very effective when woven, and a soft finish and feel must be given to the cloth.

The marks on Fig. 20 are intended for white threads, and heavy squares for colors.

FIG. 20A.

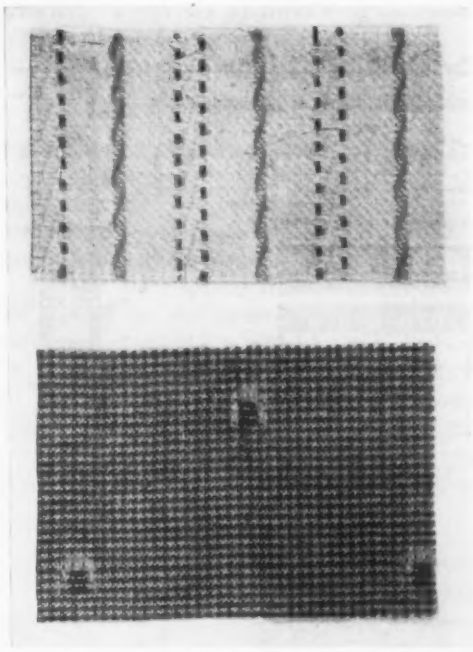


FIG. 23.

WARPING AND DENTING PATTERN.

| | | | | | |
|---|---|---|---|---|---|
| 20 | Threads | White | = 20s | = 10 | dents |
| 2 | " | Light Brown | = 20s | = 1 | " |
| 2 | " | White | = 20s | = 1 | " |
| 6 | " | White Mercerised | = 2/40s | = 2 | " |
| 2 | " | White | = 20s | = 1 | " |
| 2 | " | Light Brown | = 20s | = 1 | " |
| 20 | " | White | = 20s | = 10 | " |
| 6 | " | Lt. Green Mercerized | = 2/40s | = 2 | " |
| 60 | Threads | | | | 28 dents |

The particulars are: 32 dents per inch in the reed, 2 and 3 threads per dent, 20s and 240s warp, 64 picks per inch, 16s filling.

Fig. 23 is a silk spot and check effect which is fashionable in all colors at present. Larger spots and checks are also desirable. The spots are made by extra warp threads. The loose floating threads are cut off after weaving.

Fig. 24 is a very popular silk poplin, the design being made by the changing of white and colored threads. The warping is 1 thread white, 1 thread color, where white

FIG. 24.

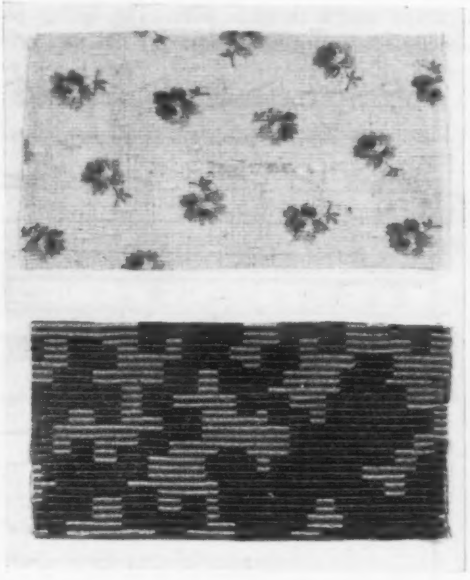


FIG. 25.

comes to the surface the next colored thread goes behind, thus forming the colored figure on white ground and vice versa.

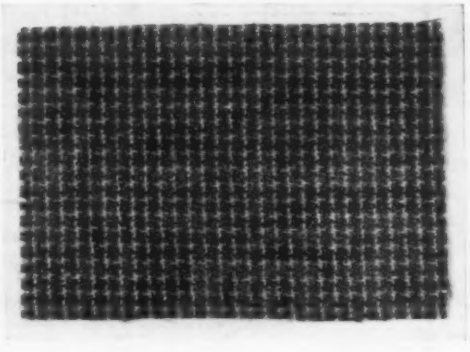


FIG. 26.

Fig. 25 is a neat print design made from ordinary warp yarns. The filling is slub or

knop yarn. These designs are required with a muslin or open ground of light texture, and small floral figures in all colors, with two tints in each figure.

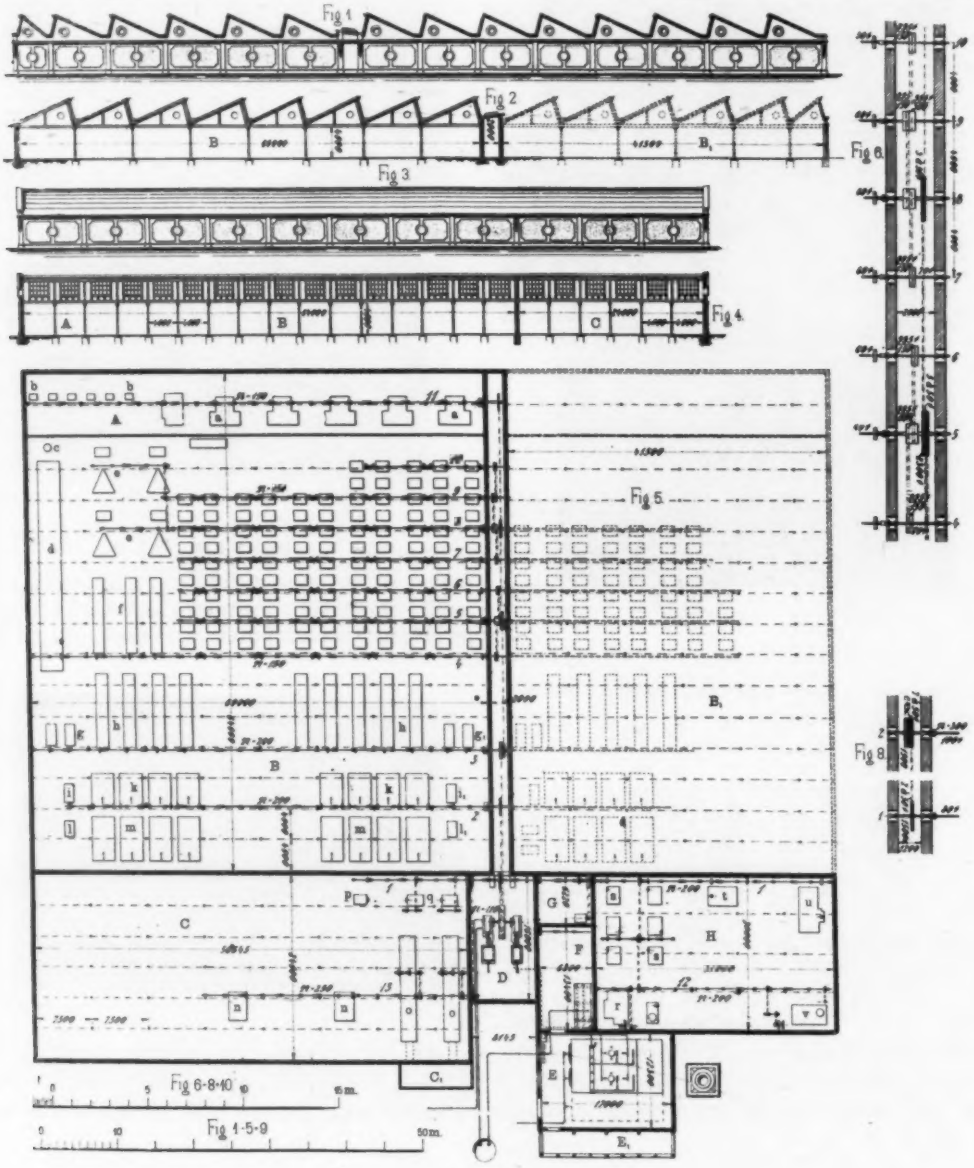
Fig. 26 is a small check effect which has become popular in dark and light colorings. The warping pattern is 6 threads black worsted and 2 threads silk. The filling pattern is the same as the warp.

## A COTTON BLANKET MILL.

*From Uhlands Technische Rundschau.*

(Translated from the German by the Editor of the Textile World Record.)

A plan of a cotton blanket mill built for Khetsidas Hurmuktrai & Co., Bombay, is shown in the accompanying illustration. It was designed by the Saechsischen Maschinenfabrik, Chemnitz, Germany. Care has




A COTTON BLANKET MILL.

been taken to arrange the room and machinery to correspond with the movement of the material during the process of manufacturing. Figs. 1 to 5 show the ground plan, the facade and sections of the mill, which is one story throughout. The entire width of the spinning and weaving room is 197 ft.

In room A, which is 197 by 26 ft., are 6 beaming machines, b, and 5 nappers, a. The spinning and weaving room, B, has an area of 184 by 210 ft. It contains 8 pairs of 2-cylinder cards, k and n; 2 grinding machines, i and i', also 2 frames for the card cylinders, l and l'. Separated from these machines by a wide passageway are 9 spinning machines, h, of 60 spindles each, with a gauge of 11 inches, also 2 doubling machines, g and g'. The following machines are located in the weave room: The slasher, d; the sizing boiler, c; 2 spoolers, f; 4 warpers, 2; and 120 looms with a reed space of 57 inches.

Next to the spinning room is the room, C, for mixing the raw materials. In this room there are 2 cleaning machines, o; 2 yarn waste pickers, q; and 2 mixing pickers, m. At the side of this room, C, is the power house, D, next to which are the dynamo room, G; the repair shop, F; the dye house, H; the boiler house, E; and the coal chutes, E'.

The dye house is 101 by 66 ft. and contains 6 jiggers, s; a dyeing machine, r, with a centrifugal extractor; the calendar, t; the cylinder drying machine, u, and a second drying machine, v.

The outside walls of the mill have no windows, light being admitted from above. The arrangement of the roof windows is shown at Fig. 4. Two boilers are required to supply steam for the engines and dye house, there being room for a third boiler when it is required. In the power house, D, is a 2-cylinder compound steam engine for supplying power to the spinning and weaving rooms and dye house. The engine develops 515 h. p. at 110 revolutions. The power is transmitted from the fly wheel of the engine direct to the shafts, 1, 2 and 3, in the belt way. Shaft 1 transmits 107 h. p. to the dynamo in room G, 50 for the dye house, H, the repair shop, F, and the shaft 13 in room C; besides 4 h. p. for the yarn waste picker. Shaft 2 transmits 60 h. p. for the card room; shaft 3, 30 h. p. for the spinning and doubling machines. Shafts 4 to 10, supplying power to the weave room, run 110 turns per minute, and altogether transmit 220 h. p. Shaft 11 runs 150 turns per minute and transmits 25 h. p. Shaft 3 drives shaft 5, which in turn drives shafts 4 and 6. Shaft 8 is also driven from shaft 5, which in turn drives shafts 7 and 9. Shaft 10 is driven from shaft 9, while shaft 11, which supplies power to the beaming machines and nappers, is driven from shaft 8. The arrangement of the pulleys and shafting in the belt-way is shown at Figs. 6 and 8.

The capacity of the mill is 5,000 cotton blankets per day. Room B' will accommodate additional machinery for an increase of 50 per cent. in the product of the mill.

## UNDULATING EFFECTS IN FABRICS.

The Textile Recorder recently published the following description of a process and necessary appliances for producing undulating effects in fabrics as employed by G. Patrone & Co., Torino, Italy:

"The production of what we may term fancy effects in fabrics has occupied the attention of inventors for a number of years—ever since weaving came into existence, in fact. With the advances in the mechanical arts, the inventor has had many more facilities presented to him, and the result has been that there are at the present time a great many devices which work quite efficiently. These devices are many and various, and produce effects which vary very much in appearance.

"The latest to come under our notice is that illustrated herewith. The apparatus has been designed with a view to the production of wave effects in fabrics, and it can be applied to any class of loom. Waved line effects can be produced, and mohair or crepe effects on plain fabrics.

"Figs. 1 to 5 show fabrics in which certain pleasing effects have been produced by the apparatus. These effects are all produced

on one main principle, namely, the assembling or crowding of the threads at various portions of the fabric. A greater or less number of threads may be dealt with independently of the ordinary arrangement of the threads in the fabric itself.

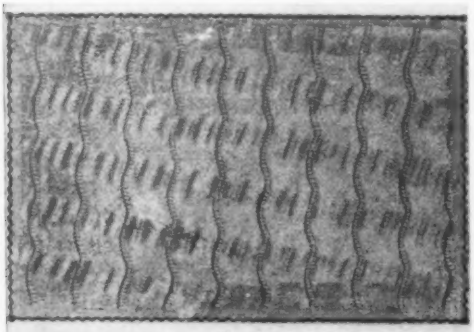


FIG. 1.

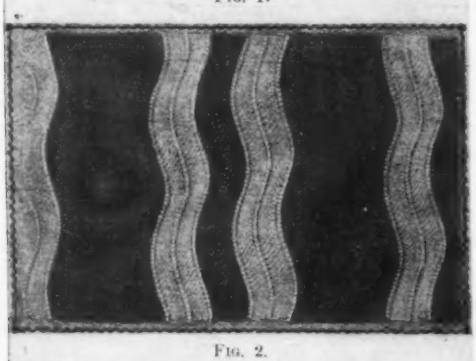


FIG. 2.

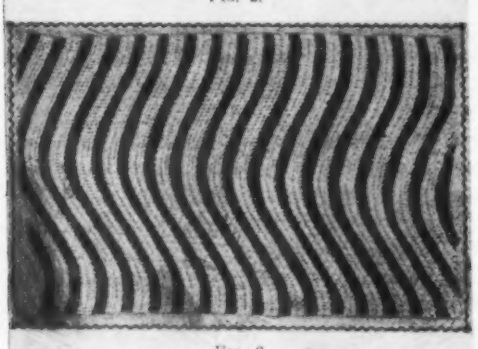


FIG. 3.

"Figs. 6 to 11 are line views of various parts of the mechanism employed. The device consists essentially of a reed, P, which is provided with flexible teeth soldered or otherwise connected together in series at their upper extremities only, and free at their lower extremities which terminate in points; and a cylinder, C, upon the surface of which is formed a series of sinuous grooves, the path of which is determined in accordance with the design required for the fabric. The lower and free extremities of the teeth of the comb, P, engage in the corresponding grooves upon the cylinder, C, passing through a longitudinal slot formed in the tube, T, which envelops and protects the cylinder, C, for its entire length, leaving

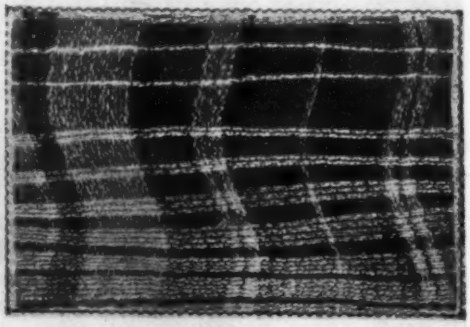


FIG. 4.

FIG. 5.

it free, however, to rotate upon itself. Owing to the rotation of the cylinder, C, the points of the teeth of the comb, P, which are engaged in the grooves are forced to become displaced more or less towards either the right hand or the left according to the path of the grooves themselves. A lever or handle, O, fixed upon the upper extremity of the shaft, F, enables the operative to actuate the cylinder, C, by hand, and thus bring back the design to its exact position

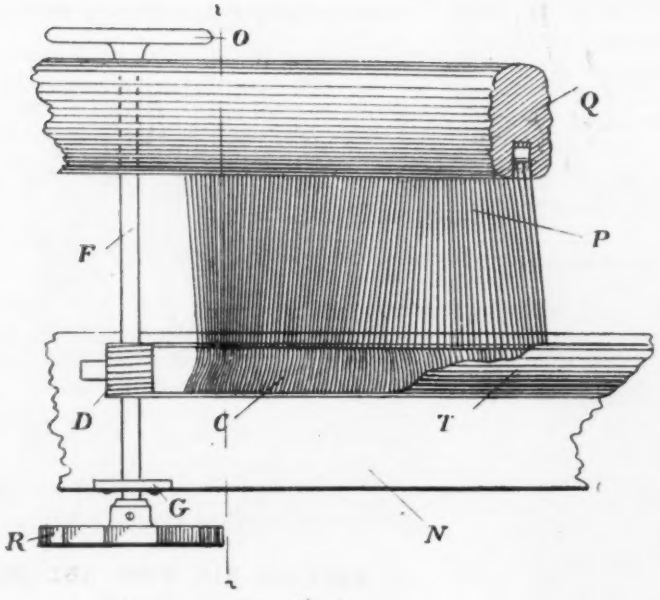



Fig 6.

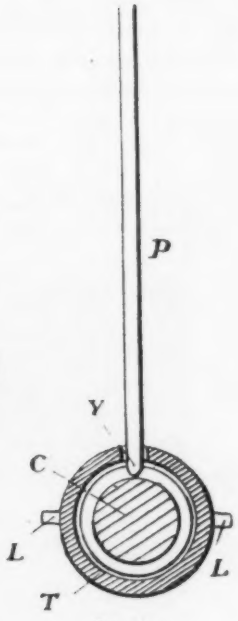



Fig 10

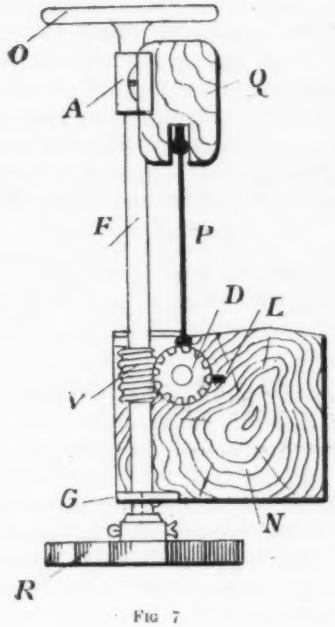



Fig 7

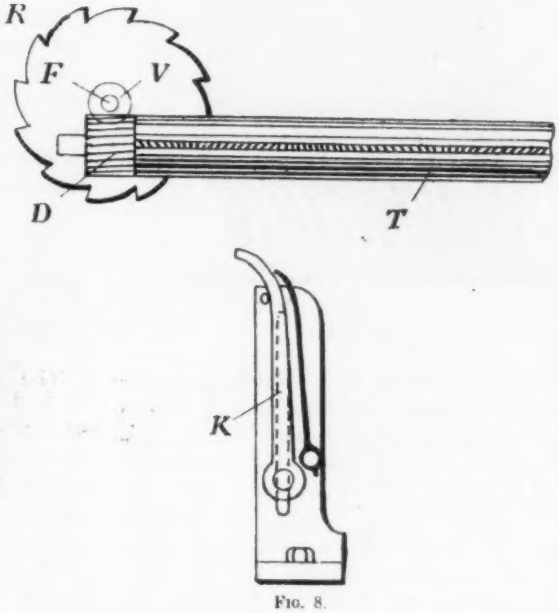



Fig. 8.

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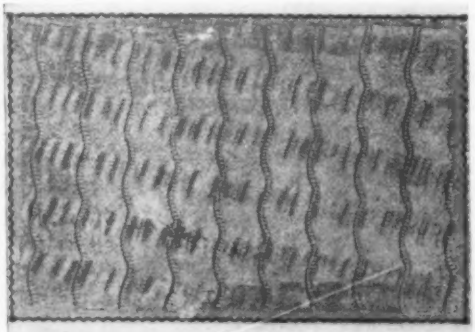


FIG. 1.

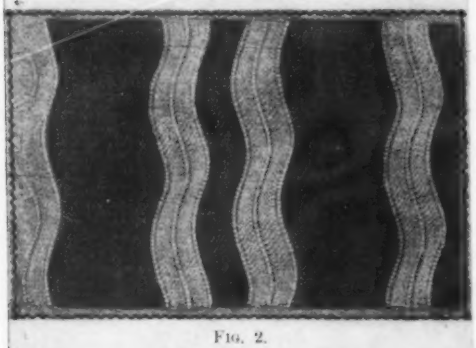
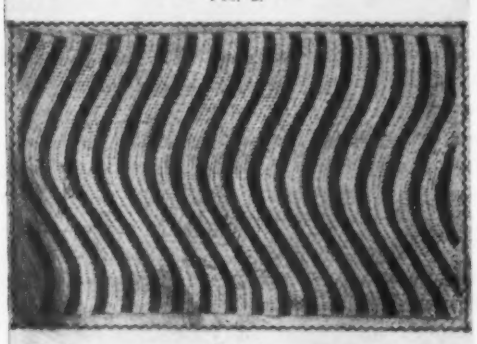


FIG. 2.



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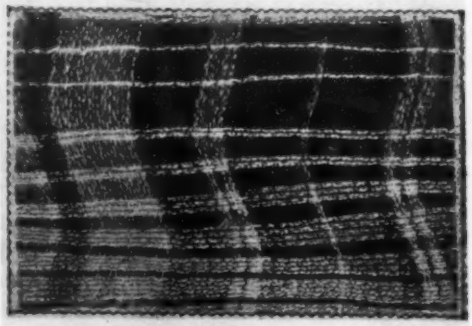

FIG. 4.

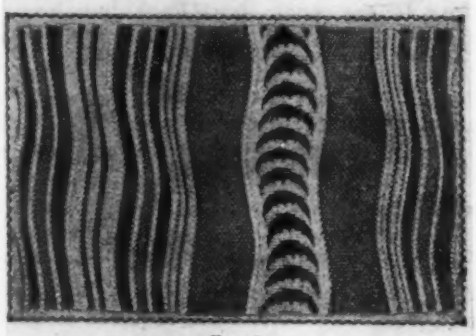

FIG. 5.

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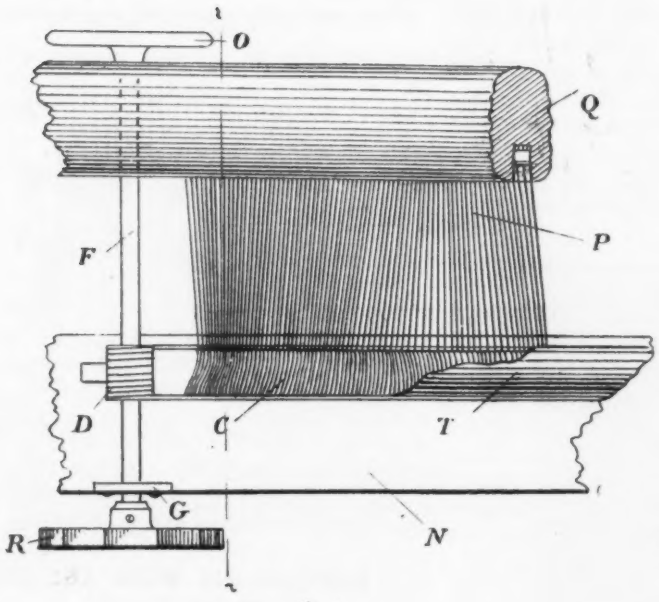



Fig 6.

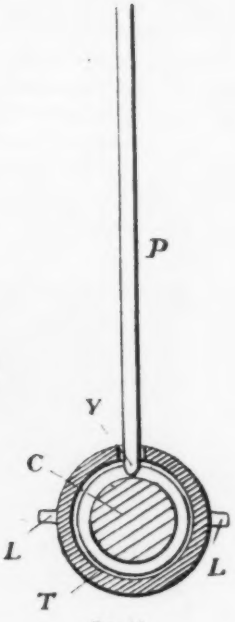



Fig 10

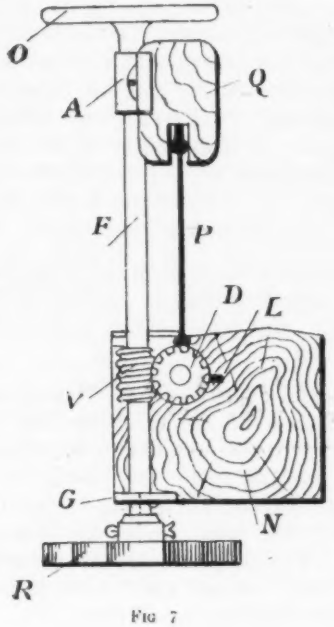
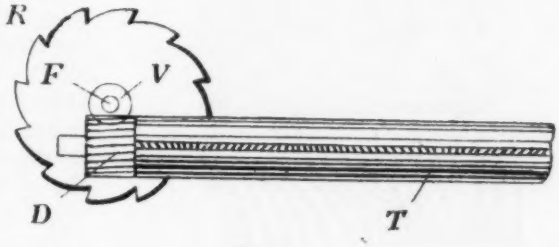



Fig 7



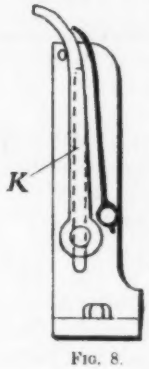




Fig. 8.

when it has become displaced by any means.

"When the complication of the design is such that a number of grooves equal to the number of teeth in the comb necessary for and corresponding to the fabric which it is desired to manufacture cannot be formed around the cylinder C, and also when (in order to reduce the cost of production of the

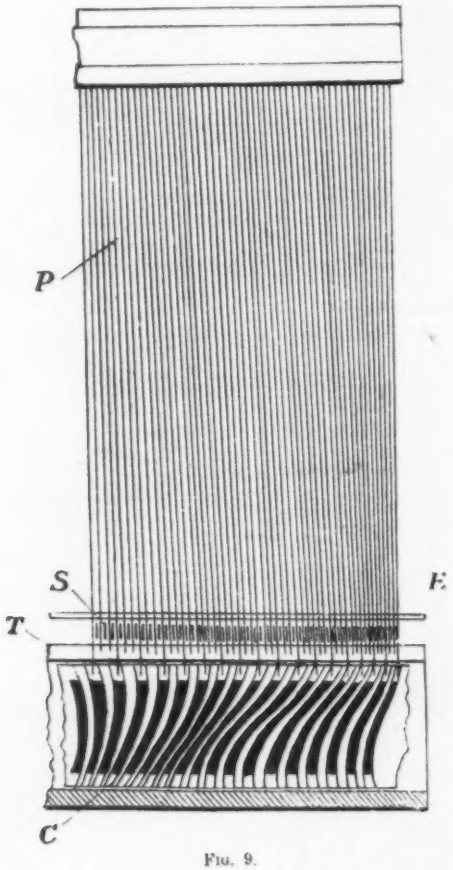



FIG. 9.

cylinder) it is desired to diminish the number of such grooves, the modification shown in Figs. 9 and 11 may be applied. In this modification a portion only of the teeth extend to and enter with their lower part, the grooves corresponding to the said reduced number of teeth, the intermediate teeth being cut somewhat shorter. These teeth are connected to and caused to participate in the lateral movement of the teeth of normal length by means of a spiral spring, S, each helix of which is introduced at the rear between two adjacent teeth, and which is held

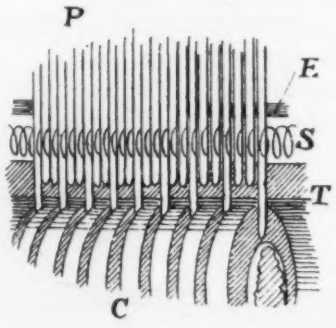



FIG 11

in position by means of a block, E, which is screwed to the latter. The device is certainly most ingenious, and the effects produced as exemplified are very novel."

## EASY IN HIS MIND AND HIS CLASS ROOM.

The Bradford Textile Society's session ended with Professor Barker's benediction upon the metric system of weights and measures. Eighteen months' trial at the Technical College has shown that the metric units can be substituted for English units in textile calculation. And, in his own mind, Professor Barker is dispósed to be sanguine as to the advantage of a general adoption of the system.—The Dyer and Calico Printer.

The exports of wool from Cape Colony during 1909 amounted to 297,614 bales, the December shipments alone amounting to 44,080 bales.

The total exports from Plauen to the United States for the three months ending March 31, 1910, amounted to $1,628,208, an increase of $188,405. Machine-made laces and embroidered articles amounted to $1,035,419 of the total trade, an increase of $46,777. The largest increase occurred in artificial silk articles, which rose from $21,691 in 1909 to $120,807 in 1910.

## VIGOUREUX PRINTING OF WORSTED.

*BY GAUL.*

(Translated from the French by the Editor of the Textile World Record.)

The vigoureux process of printing worsted was invented fifty years ago by M. Vigoureux of Reims. He moved his factory to Roubaix and the mill that he founded there is still in operation, being owned by the firm Gaydet.

This process consists in printing slivers of worsted by an operation similar to that used for the random dyeing of cotton and wool. The sliver of worsted, well opened up, is printed so that bands of color appear on both sides of the sliver at prearranged distances, which may be uniform or irregular. The sliver is never printed in more than one color. It is more expensive and at the same time more injurious to the wool to print several shades than to mix the slivers which have been printed separately with different colors.

Mixing the slivers on the gill box gives the first mottled effect. Finally several slivers printed with different colors are passed through the gill boxes, producing the well known vigoureux effect. Vigoureux yarns are used principally in the manufacture of light fabrics and in spite of their high price they have supplanted mixed yarns produced by the mixture of slivers dyed in the ordinary way.

Vigoureux printing requires much experience on the part of the dyer, for it is difficult to obtain a sliver printed regularly with the right shade. Fig. 1 shows the machine built by Meyer & Boquillon, Roubaix, for vigoureux printing and which is unquestionably the machine in widest use. The balls of worsted, 1, Fig. 2, are set in a rack which contain 12 balls. The unwinding of the sliver is effected by the rolls, 2, which are driven by a chain from the cylinder, 8, of the gill box. The slivers passing over the rollers, 4 and 5, and the rods, 6 and 7, pass through the guide, A, between the corrugated rollers, 8 and 9, and on the pins, 10.

The slivers then pass between the printing rollers, 11 and 12. The upper roller, 12, is corrugated in a spiral form, this arrangement giving a better impression on the worsted than when the corrugations run lengthways of the roll. The lower roll, 11, is rubber. The color is supplied to this roller by the roller, 13, which is covered with felt and revolves in the color liquid in the tank, 14. Thus the sliver passes between an engraved roller and the rubber roller, the pressure between the two being regulated by the lever and weight, 15. The sliver, 16, after being printed, is carried over the roller, 17, and then folded either on the floor or on a truck. The printing roller, 12, may be engraved in three different ways:

1. Dark shades. The roller has three parts in relief to one part hollowed out.

2. Medium shades. Equal parts of the surface are in relief and hollowed out.

3. Light shades. One part is in relief to 7 or 3 parts hollowed out. At times the relief parts are arranged irregularly in order to impart color to the worsted for varying distances at varying intervals.

As has been said, the sliver of worsted is printed only with one color and it is by mixing at the gill boxes and draw boxes that the diverse shades and mixtures are obtained. The colors can be either fast to resist the fulling process and the light or of a relatively fugitive character.

The dyestuffs in most general use are:

A. Natural dyestuffs, such as logwood, fustic, quercitron, redwood and Persian berries.

B. Aniline colors, such as violet acid 6 B N, violet acid 4 R S, alkali violets and blues, Victoria blue, cotton blue, Carmin G, acid greens, tartrazine orange, roccelline, wool scarlet, wool blue, acid fuchsine, rhodamines, azofuchsines B and G, indulines, brilliant black, diamond black, naphtol black, naphtylamine black.

C. Alizarine colors, such as alizarine S and W S, alizarine pastes, alizarine blue S and W S, chrome yellow, wool yellow, mordant yellow, yellow flavine W, alizarine orange, alizarine cyanines, alizarine green, Galleine S, Ceruleine S, cloth red, diamond green, anthracene brown, alizarine black, cyanine black G.

The thickening materials most generally employed are British gum, starch, dextrine solutions of lichens, linseed treated with hydrogen dioxide or sulphite of soda. These materials resist the action of acid, but alkalies make them thicker. For light shades the printing solution is thickened with white dextrine, or better, gum tragacanth. All of these materials are soluble in tepid water and consequently are easily removed by washing.

During the passage of the sliver through the printing gill it is necessary to keep the color solution at a uniform level in the tank. The ordinary shades passing directly to the steaming process without preliminary dry-

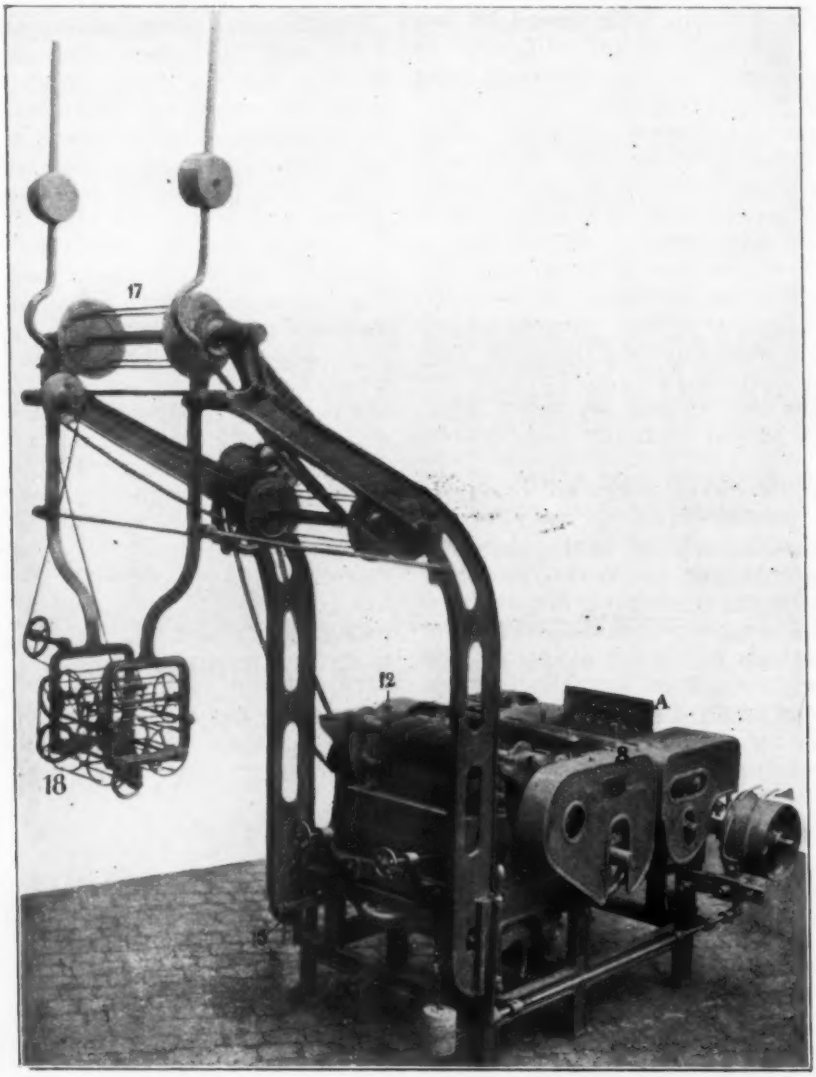



FIG. 1.

ing. Dark shades or blacks are dried either in the open air or better, in a drying chamber. Fig. 3 shows the Masurel-Leclercq system of drying. After coming from the printing rollers, 11 and 12, the sliver enters the drying chamber, L, passing vertically to the carrier roll, H. At the top of the chamber is a ventilating chimney, I. The sliver passes down to the rollers, N, from which it is carried to the cans. This is an excellent method of drying as the sliver does not come in contact with any rollers until after the drying is well advanced. Circulation is maintained by the circulating fan, V.

The trucks or perforated cans containing the printed worsted are placed in a steaming chamber similar to that shown at Fig. 4. This can be made either of wood, iron or masonry and is closed hermetically by a door. At the lower part is a perforated false bottom or floor covered with straw under which is placed the perforated steam pipe. The material is exposed to the steaming process in this chamber from one to two hours, according to the shade and nature of the mordant used. The pressure of the steam does not rise above one-half atmosphere. Above that there is a tendency to yellow the wool and make it harsh. Usually damp steam is employed and the work is carried on preferably at night, the material being left in the chamber until morning so as to develop the colors.

The shades being fixed, the next process is washing. This removes all the thickening material and excess of mordant and dyestuff which the material contains. If the worsted is not well washed the sliver will gum the rollers and pins in the drying machines, making the work run badly, preventing a parallelizing of the fibers, and causing uneven and twitty yarn.

The scouring machine consists of 4 to 8 tanks connected at the bottom. In each tank are copper rolls to guide the sliver through the liquor. At the exit of each tank the sliver passes between squeezing rolls to remove the surplus water. The water is kept at a temperature of 100° to 120° F., and is circulated in the direction opposite to that of the sliver. After coming from the washing machine the worsted is dried either by placing the cans or trucks in a drying chamber, or better by drying in a Masurel-Leclercq machine, as has already been described.

The worsted cannot be used in its present state, but must be mixed with other slivers dyed different colors in order to produce the vigoureux effect desired. As shown at Fig. 5, for example, a sliver, 1,

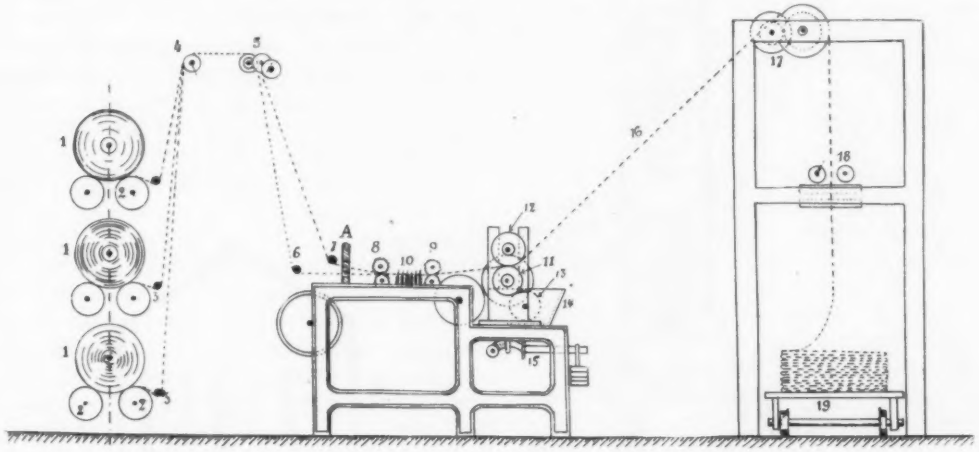



FIG. 2.

may be dyed red; sliver 2, blue; sliver 3, black. These are mixed on the gill box in the desired proportions. The number of passages through the gill box varies in different cases. After this the slivers are manufactured into yarn by the usual process.

RECIPES FOR VIGOUREUX PRINTING.

A. Logwood Black. Dissolve in 16 pounds of boiling water 6 pounds of dry extract of logwood; let cool and settle. Mix

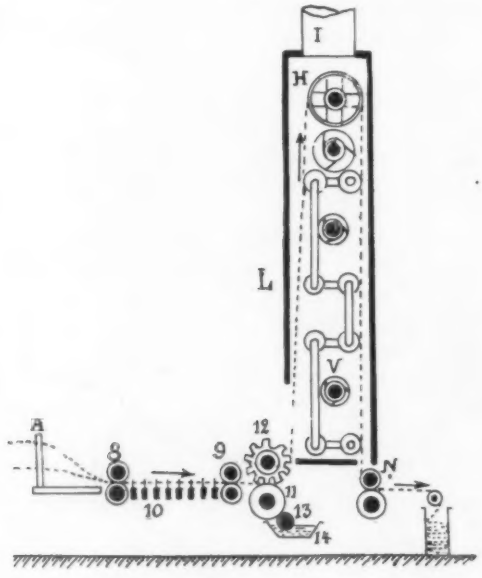



FIG. 3.

the solution with 4/10 pound of pyrolignite and 1/4 pound of nitrate of iron at 40° B. Thicken with 1/2 pound of gum tragacanth or 1 2/10 pounds of British gum. Dry before steaming and rinsing.

B. Shades with extract of Dyewoods. Brown. Dissolve in 30 pounds of boiling water 5 pounds of extract of redwood (Lima or St. Martha) and 2.5 pounds of extract of quercitron bark. Let cool and settle. Thicken with 3/4 pounds of gum tragacanth, then dilute with 1 1/4 pounds of acetate of alumina at 10° B., adding a little acetate of iron. Dry, steam and rinse.

C. Acid Aniline Colors. Recipe suited for all cases. Dyestuff, 1/100 to 3/100 pound. British gum or destrine, 1/4 to 3/10 pound. Acetic acid, 1/100 pound. Water, 6/10 to 7/10 pound. Do not dry after printing. Steam and wash.

D. Alizarine and similar colors. This class of colors includes all the dyes which are fixed by the action of mordants.

1. Alumina mordant. Dyestuff, 3/100 pound. Water, 1/10 pound. British gum, 1/4 pound. Gum tragacanth, 25/100 pound. Water, 1/2 pound. Add the sulphite of alumina, free from iron, 4/100 pound. Water, 1/10 pound. Oxalic acid, 2/100 pound. Water, 5/100 pound. Do not dry before steaming.

2. Chrome mordant. Dyestuff, 3/100 pound. British gum, 3/10 pound. Water, 6/10 pound. Add oxalic acid, 2/100 pound, and acetate of chrome at 20° B., 8/100 pound. Steam as above.

3. Iron mordant for dark shades. Dye-

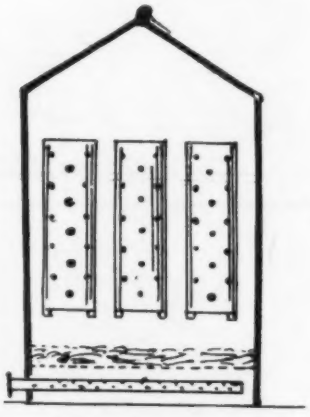


FIG. 4.

stuff, 3/100 pound. Dextrine or British gum, 1/4 pound. Gum tragacanth, 25/100 pound. Water, 6/10 pound. Add acetic acid, 45/100 pound, and pyrolignite of iron, 1/10 pound. Steam without drying.

E. Substantive Dyes. Dyestuff, 30/100 to 40/100 pound. British gum, 3/10 pound. Water, 4/10 to 6/10 pound. Add acetic acid, 7/100 pound. Let cool and add chrome alum, 30/100 pound and water, 1/10 pound.

## ENGLISH NOTES.

*(By Our Special Correspondent.)*

The shelving for three months of the cotton spinning wage question bears various explanations of which respect for the new King is only one of many. Business is better and not likely to grow worse as time passes. The Fine Spinners' Association has declared a dividend of 8 per cent. Outside public opinion has been none too favorable to the employers' proposition to take away 5 per cent. and the Manchester Exchange was never convinced that a reduction would be enforced. The negotiations were expected to end in some bargain whereby the operatives would forego the next advance to which they might become entitled.

But for the shortage of supplies Lancashire would probably be doing a large business and when the tension has been eased and prices come more into the range of the Asiatic pocket there may be a resumption of the boom. With relatively little assistance from the price of materials, exports of wool goods have gone up 30 per cent. in the first four months of this year, as against the same in 1909. The cotton consuming market ought, by the time relief comes, to be more famished than for woolen and worsted goods.

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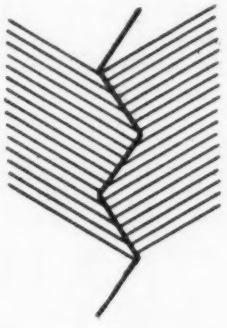
The idea on which worsted designers are most busy goes by the name of "saw-tooth"



herring-bone. The accompanying sketch explains the notion which consists fundamentally of joining twills otherwise than with the usual straight cut. The idea has many adaptations and is used on a small scale as a ground weave for solid colors and small checks. It is used with effect in dark and light colors for suit stylings and attention is directed to the idea with every confidence that designers will find it useful to them. The saw-tooth effect is being worked by mills doing the very best class of trade.

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A sample of a new fiber is forwarded, Poseidonia Australis, otherwise known as marine fiber, a kind of decayed seaweed, to dredge which off the South Australian coast an English company has just been formed. it is the intention of the exploiters to use this in conjunction with wood pulp to make paper yarn under license of the Aktiengesellschaft fuer Garn Fabrikation, Berlin. A firm of produce brokers commend it as a stuffing for furniture and mattresses, although past experience with seaweed-stuffed chairs in moist weather is not altogether encouraging. Edwin Middlemast's certificate that the fiber has a value of 4 cents a pound in tweed manufacture is based on a trial, but there are competent judges who think that woolen men would be more satisfied to buy this material at so much a hundredweight.

The color of the material is a yellow brown. Its length is good enough. In the dry state it is brittle and harsh. There is a flavor of sea salt in it and some traces of chalky matter adhere to the fibers here and there. The fineness varies and in places portions of the original stalk have not been thoroughly disintegrated. Dealers in woolen materials to whom the fiber has been shown have expressed disappointment with its general features. Pontoons, dredgers and washing plant to cost $150,000 are calculated to be necessary to a production of 20,000 tons a year. [A sample of the marine fiber can be seen at our Boston office.—Ed.]

* * *

In connection with this marine fiber company it is stated that the German wood pulp yarn mills now have a capacity of 27,000,000 pounds of yarn per annum. The yarn is used in substitution for jute in bagging and sacking and is woven into towels, dress materials, sail cloth and carpets. London ac-

countants who went to Germany to prove the cost and sale price of the paper yarn report that the selling price averaged nearly 6 cents a pound and that the cost, exclusive of supervision, establishment and depreciation charges, was under 3 1/2 cents a pound. At this rate the gross profit on the German production should be $675,000 per annum.

* * *

Wool sorters in premises handling any of the wools and hairs liable to convey anthrax have general instructions now to lay aside all blood-stained material. The order is justified as may be seen from analysis of 83 tests made in three months at Bradford. Of these samples of blood-stained stock twelve contained anthrax germs. Seven samples were of mohair, one of Russian camel hair, one of Cape wool and three of brown Bagdad wool. If, as is most probable, the mohair was from the Van country in Turkey, it is seen that eleven out of the twelve convicted samples were from the same part of the world. It is this area between the Caucasus and the Persian Gulf that is answerable for nearly all the anthrax infections. An anti-toxic serum, discovered by Dr. Sclavos, is stocked in a fresh condition in Bradford for prompt medical use to combat the disease.

* * *

In May, 1909, wool worth $871,000 was shipped from Bradford to the United States. The amount is under $200,000 in May of this year. There is a violent difference too in other respects. A year ago Americans were outbidding all comers for the lightest-conditioned portions of the English clip. Some of that wool, Shropshire, is on its way back from the United States. Large parcels of North hogg wool sold but not sent to America are lying in Yorkshire warehouses and may any day be offered for resale. The presumptive reason for the return of the Shrop wool is the relative cheapness of U. S. territory grades this year, coupled with the slackness of American trade.

Wool is not the only item showing a decrease in the Bradford tables. There is a fall of $20,000 in worsted dress goods, of $208,000 in cotton linings and $26,000 in worsted coatings. Worsted machinery still streams out, but the increase ($35,000) is smaller than of late. Of silk noils and waste in which there has been active inquiry for small and special lots, the turnover in May for America has been $6,000.

* * *

The British Association of Wool Buyers has been formed by merging two bodies into one and the new institution is fully representative of the interests of the home and colonial sections of the business. J. E. Sharman is its chairman and men like Henry Ayrton, J. W. Collinson, Arthur Hill and F. Willey are among its officers. The members are in the wool dealing and top making trades and the Association exists to settle their mutual differences by arbitration, to fight their battles with railway companies and others and to bring forward measures for the good of the trade. Its headquarters are in Bradford and it may be looked on as the British wool dealers' Chamber of Commerce.

* * *

Nothing elaborate is done in the way of welfare work by our textile mills. Plain dining rooms, sometimes bath accommodation and in a few instances mill institutes, are provided, but there are mills without kitchens or cloak-rooms and without everything but the bare walls, floors and machinery. This is not the true measure of our interest in welfare work. Of late years there has been a remarkable growth of the desire to make workpeople comfortable and more would be done in some directions if the technical managers had their way. A Manchester manager's aphorism: "The contentment of the worker and the prosperity of the firm are almost synonymous terms" commands instant acceptance. The best class of managers spend more than a little of their time in making their help contented. On the whole, attempts to make a fortune by underpaying and overdriving workpeople have proved a failure. It is the spirit of willing helpfulness that makes things pay and in losing that the superintendent blunders

badly. A really inexcusable error is to despise the opinion of the man who has to carry out the work. I know the opinion of the twisters in a weaving mill about the manager who will not let them do their complex work in the ways they know are best and cheapest and most satisfactory. I know the effect that this contempt for skilled intelligence has on the energies of these men. If they were simply not prevented from using their brains and doing their work properly they would be at ease.

* * *

In these pages in December last a summary was given of the Census of Production figures relating to the British cotton, woolen and worsted industries. It is now possible to give the output of the other textile branches as ascertained for the year 1907, and for the sake of completeness the new and old figures are joined together. The value of gross output is followed by a statement of net output (i. e., the gross output less cost of materials and cost of work executed by other firms).

| | Gross Output | Net Output | Persons Employed |
|---|---|---|---|
| Cotton Factories | $884,700,000 | $234,705,000 | 572,869 |
| Woolen and Worsted | 351,655,000 | 97,260,000 | 257,017 |
| Jute, Linen and Hemp | 155,990,000 | 46,690,000 | 153,464 |
| Silk | 26,020,000 | 8,750,000 | 32,036 |
| Lace Factories and Warehouses | 50,015,000 | 16,910,000 | 34,583 |
| Hosiery Factories | 43,445,000 | 14,970,000 | 47,939 |
| Elastic Web | 4,240,000 | 1,415,000 | 4,292 |
| Cocoanut Fibre, Horsehair, Feather and Sundry Materials, Factories & W'ksh'ps | 5,810,000 | 2,090,000 | 5,757 |
| Rope, Twine and Net Factories | 18,030,000 | 4,780,000 | 12,148 |
| Flock and Rag | 4,260,000 | 795,000 | 2,375 |
| Flax Scutching | 455,000 | 340,000 | 3,760 |
| Velvet and Fustian Cutting | 585,000 | 560,000 | 3,443 |
| Bleaching, Dyeing, Printing and Finishing Factories and Workshops | 88,910,000 | 51,845,000 | 102,611 |
| | $1,637,115,000 | $481,110,000 | 1,232,294 |

Points of note in the foregoing table are the size of the cotton industry, which is almost as large as all other textile trades combined, and the importance of the bleaching, dyeing, printing and finishing works which of course are organized as distinct industries and are dominated by combination of capital. It may be worth adding that the output of jute fabrics is valued $33,780,000, and of linen fabrics (pieces) is $49,345,000, of linen handkerchiefs and made-up goods the production of the mills is $10,550,000. There is a separate linen making-up industry. In the silk trade 414,000 pounds of yarn, value $1,985,000, are thrown in this country and 2,306,000 pounds, value $4,700,000, are spun from waste. To judge from partial information one-half of the products of the lace industry are made on net or curtain machines and half on machines of other kinds. Hosiery account for something like half of the business in knit goods and the production runs to 14,167,000 dozen pairs.

The returns from the finishing industry permit an idea to be formed of the dimensions of the respective classes of cotton cloth. Some 7,091,485,000 yards of cloth are woven and it appears that 2,192,504,000 were bleached but not dyed or printed; 1,121,778,000 were dyed but not printed; 1,326,061,000 were printed.

A balance 2,451,142,000 apparently includes both grey and yarn dyed cotton fabrics. A sum of $11,610,000 was received on account of stoving, dyeing and finishing wool, woolen and worsted yarn and cloth and this paid for treating 14,416,000 pounds of wool, 47,182,000 pounds of yarn and 235,791,000 yards of pure and mixed wool fabrics.

* * *

Strong public interest is shown in the collective exhibits made by Bradford and Huddersfield at the Brussels Exhibition this year. Apart from showcases filled with draped and festooned fabrics the display is one of tableaux. Bradford shows the sheep on the hill, workmen putting the wool through processes and then fashionable ladies clothed in Bradford fabrics at a reception and at a garden-party in Mayfair. Huddersfield shows its cloths being worn by well-known legislators in surroundings which duplicate the lobby of the House of Commons. The display is rather expensive, but the cost is shared by many hands and it impresses the people. The arrangement is by the first experts of the day.

* * *

Weavers' price lists in this country are complicated, limited in application and compiled on many different systems. A practice of reckoning by the "string" (10 feet) is

usual in the Yorkshire carded woolen trade and prices are reckoned for the slow, overswung loom of 50 to 60 picks a minute and are subject to 12 1/2 per cent. deduction for fast looms. For one shuttle and woolen goods the basis is 8 cents for 11 to 12 picks per inch and 1 cent added per every two picks. Thus for 13 to 14 picks the rate is nominally 9 cents and for 43 to 44 picks is 24 cents. There are extras of one cent a string for the second shuttle, 1 1/2 cents for the third, 2 cents for fourth and 3 cents for the fifth, with 36 cents extra per cut for the second beam.

The extras are the same for cotton warp woolens, but the basis is 8 1/2 cents for 17 to 19 picks with an advance of 1 cent per three picks, so that for 35 to 37 picks the scale is 14 1/2 cents. For plain worsteds woven in the heavy woolen area the basis is 8 cents for 17 to 19 picks and 9 cents for fancy worsteds with advances of one cent per three picks and extras as in the case of the woolens first named. The scale is not universal even in its own district and less is paid by many mills.

* * *

The Bradford standard list for worsted coatings is not universal either. Its basis is a loom of 84-inch reed space or less, 120 to 130 picks speed and a 70-yard warp. Weaves up to eight shafts are tended by weavers of two looms who get 7 1/2 cents per quarter-inch pick. Weaves up to 12 shafts, occupying one weaver are paid for at 11 cents per quarter-inch pick. There are extras per pick for stripes and colors, for boxes, jacquards and slow looms, followed by extras per piece for extra shafts, shuttles and beams, for close set and short warps. Then there is a system again of paying according to the ounces per yard and picks per quarter.

* * *

The Lancashire cotton list has been given before. It starts with a 45-inch reed in an ordinary loom with cloth 39 to 41 inches wide, 60 ends per inch and 15 picks per quarter (1 1/2 per cent. take-up allowed) and a length of 100 yards. With warp 28s or finer, and filling 31s to 100s, the price is 4 cents per pick per quarrter inch. The Lancashire weavers are strongly organized and their list is authoritative to a degree that woolen and worsted ones are not.

## COTTON IN INDIA.

*BY WESSEX.*

"East Indian planters have been receiving the most direct form of encouragement to persevere with cotton. Their Broach cotton which was bringing 241 rupees a candy in March, 1909, was realizing 358 in last March and growers, rather than money lenders, or middlemen, were getting the money. Not since the civil war in America have there been such times for the Indian cultivators who must this year be from $50,000,000 to $70,000,000 more in pocket than in normal seasons." So writes S. H. Batlivala, one of Bombay's leading mill agents. The tale of high prices is continued by another agent, Bomanjee Petit, who takes prices as on 15th January last year and this and gives the net cost after cleaning:

| | 1909. | 1910. |
|---|---|---|
| Bengal, fully good | 194 | 271 |
| Khandesi, fully good | 201 | 279 |
| Berar, fine | 218 | 298 |
| Saw ginned Dharwar | 247 | 329 |
| Compta | 259 | 346 |
| Borsi | 250 | 356 |
| Oojein | 229 | 335 |

The run on Indian cotton, provoked by the shortage of the American crop, is further demonstrated by the statistics of the Bombay Cotton Trade Association up to March 31, 1910. There was an estimated stock of 200,000 bales on hand on Oct. 1, 1909, and since then 2,380,000 bales have been received at the port. In the half year ending with March there were:

| | Bales. |
|---|---|
| Exported | 1,392,000 |
| Sent up-country | 12,000 |
| Mill consumption | 413,000 |
| Balance, mill and dealers' stock | 763,000 |
| Total | 2,580,000 |

As shown in a further table the export of cotton from Bombay is greater by over half

a million bales than in the corresponding period a year earlier:

TOTAL SHIPMENTS, BOMBAY.

| Oct. 1-Mar. 1. | 1909-10. | 1908-9. | Increase. |
|---|---|---|---|
| Europe ..... | 693,685 | 399,712 | 293,973 |
| China ..... | 73,577 | 26,959 | 46,618 |
| Japan ..... | 539,659 | 358,635 | 181,024 |
| Coast ports ... | 24,198 | 12,625 | 11,573 |
| | 1,331,119 | 797,931 | 533,188 |
| Afloat in harbor | 51,152 | 77,165 | |

These large all-round increases are not less significant than the importation of a few thousand bales of East Indian quality into Carolina. They mean that in the first half of the cotton year the Indian export is larger than last time by 66 per cent. Spinners have wanted cotton from somewhere and the Europeans have increased their purchase 75 per cent., the Chinese 173 per cent. and the Japanese 54 per cent.

Indian cotton has no great repute in Lancashire and in the last calendar year the net imports of it were 76,694 bales. In the first fourteen weeks of 1910 a net import of 63,429 bales into England has been registered already. Fears have been expressed in cables to England that in future British manufacturers will be less dependent on United States cotton. At a pinch, Lancashire has to use what it can get, but in the fourteen weeks in point it has been taking seven or more American 500-pound bales to every 400-pound bale of East Indian.

Indian crop reporting is defective and is to be improved. All that can be said with certainty of the present crop is that it is large. Probably it is 4 1/2 million bales; an average crop is 3 3/4 to 4 millions, and the 1908-9 crop has been returned as 4,665,000 bales.

The crop needs to be large to meet these outside demands in addition to the large necessities of the Indian cotton manufacturing industry. In India, as elsewhere, manufacturing facilities have been continually extending. There were 5,196,000 spindles to feed in 1904-5 and 6,083,000 are recorded in the returns for last year. In five years there has been an increase of 17 percent. in spindles and of 76 per cent. in looms. Of looms there are 76,900 in place of 47,300 five years ago. Looms and spindles alike are principally imported from Lancashire. Indian counts are low and little is spun finer than 20s. Developments have recently been made in yarns finer than 24s and in some measure this explains the reduction in output. The yarn production in 1905-6 was 665,800,000 pounds and in 1908-9 had sunk to 629,100,000. A contrary movement is seen in the case of cloth, the output of 156,600,000 pounds in 1905-6 grew to 184,100,000 pounds in the later period.

With prices both of raw cotton and of goods against them the Bombay and Ahmedabad mills have not been making money. Mr. Petit has reckoned the loss on 10s yarn at one cent a pound and on 20s yarn at 1 1/2 cents. Although the cost of cloth had gone up to 4 cents a pound, its price had advanced only about half a cent. The profits of the mills in 1905 were a good deal more than $10,000,000; in 1909 they had fallen to $3,000,000. Authorities question whether the profits will be as much as two million dollars this year. At its best the Indian cotton industry is exceedingly profitable, as may be judged from Mr. Batlivala's summary of the working and of 55 joint-stock companies during the past five years. Some exceptionally profitable concerns like the Nagpur — Sholapur Mills are deliberately excluded from the return.

PER CENT. PROFIT ON CAPITAL.

| | | | |
|---|---|---|---|
| 1905, Spinning ..... | 38 | Weaving ..... | 42 |
| 1906, Spinning ..... | 25 | Weaving ..... | 39 |
| 1907, Spinning ..... | 15 | Weaving ..... | 23 |
| 1908, Spinning ..... | 2 | Weaving ..... | 16 |
| 1909, Spinning ..... | 3½ | Weaving ..... | 13 |

The money is going this year to the ryots instead of to the mill agents and shareholders. Cotton is dear, but stocks of goods are heavy and a revival of China trade is wanted to right them. Otherwise there is a likelihood that the transference of profit will work its own remedy by enlarging the demand for goods. Having cash in hand and handsome results to cheer him the Hindu is likely to put more cotton in.

## DRAFT AS APPLIED TO COTTON YARN PREPARATION MACHINERY.

BY BOLSTER.

(Continued from June.)

This is illustrated by the following tests, made on a draw frame with rolls and gearing of the same sizes in each case. The average weight per yard of sliver fed was 55 grains.

With one sliver fed, the draft by weight equaled 3.87.

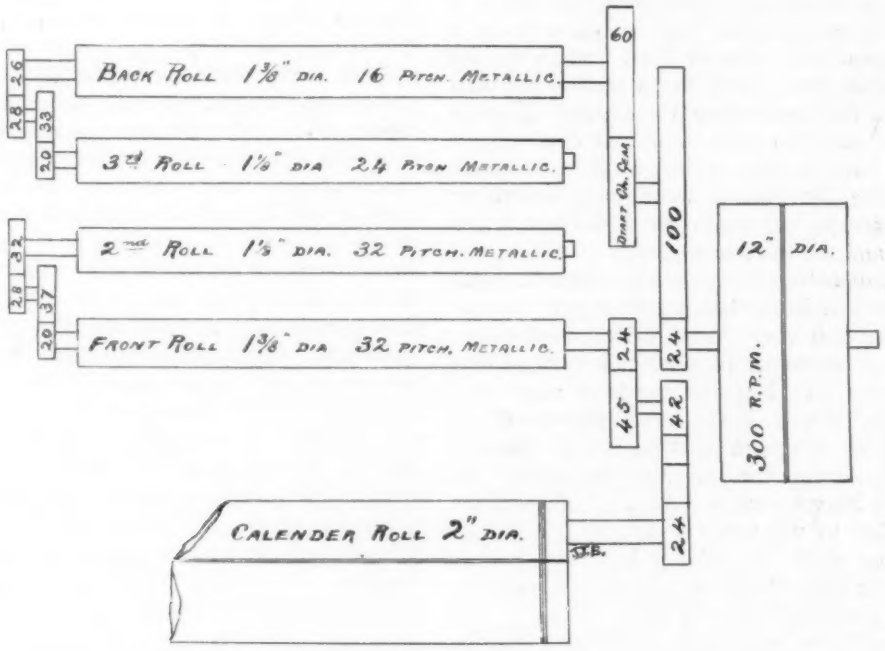


FIG. 9.

With four slivers fed, the draft by weight equaled 4.07.

With six slivers fed, the draft by weight equaled 4.11.

With eight slivers fed, the draft by weight equaled 4.14.

The above leads to the conclusion that when more strands are fed, the back roll is deprived of some of its crimping action on account of the bulk of cotton between them. They are, consequently, feeding a shorter length of sliver, while the amount delivered remains the same. This causes the sliver produced to be slightly lighter in weight than when only one sliver is fed, which indicates that the draft or ratio between length fed and length delivered has been increased.

Although various tables of allowances have been published in connection with the difference in draft to be allowed when calculating draft on metallic rolls, the writer by tests and experiments has come to the conclusion that for practical purposes, such tables are of little use when making the calculations. This is owing to the fact that speed, draft, weight and amount of previous preparation of the slivers will influence the result. When all the allowances have been carefully made it may be found necessary to use a gear either larger or smaller than the one obtained by calculation, in some cases entirely neutralizing allowances. This is often the case where the draft gear calculation gives a fraction of a tooth in the result.

If the regular draft rule is applied on metallic rolls, and the equivalent diameter of common rolls is used in place of the actual diameter of the metallic rolls, the result will give very nearly the actual draft on draw

frames where the sliver is of medium weight.

If the sliver is not exactly what is required a few yards may be run off and weighed. The correct gear may then be found by multiplying the draft gear by the weight required, and dividing result by the weight per yard.

The following tables represent the diameter of metallic rolls of different pitch, and their equivalent in common rolls.

| Metallic roll, dia. and pitch. | | | Common roll. |
|---|---|---|---|
| 1 | " | 32 ..... | = 1.33" or 8/6" |
| 1⅛ | " | 32 ..... | = 1.50" or 9/6" |
| 1¼ | " | 32 ..... | = 1.66" or 10/6" |
| 1⅜ | " | 32 ..... | = 1.83" or 11/6" |
| 1½ | " | 32 ..... | = 2.00" or 12/6" |

Rolls of 24 pitch are considered same as the 32 pitch.

| Metallic roll, dia. and pitch. | | | Common roll. |
|---|---|---|---|
| 1⅛ | " | 16 ..... | = 1.66" or 10/6" |
| 1¼ | " | 16 ..... | = 1.83" or 11/6" |
| 1⅜ | " | 16 ..... | = 2.00" or 12/6" |
| 1½ | " | 16 ..... | = 2.17" or 13/6" |

When calculating the draft of a machine equipped with metallic rolls, the above equivalent diameters may be used.

Referring to Fig. 9, which represents the gearing for a draw frame having metallic rolls of diameter and pitch shown, the draft constant would be found by using the regular draft rule; but, provision must be made for the increased surface of the metallic roll, by using the equivalent diameter instead of the actual diameter.

Referring to the table of equivalent diameters, it will be found that a 1 3/8-inch back roll, 16 pitch, equals a 2-inch common roll. The draft constant between the back roll and calender roll will be:

60 × 100 × 24 × 42 × 2 inch calender roll ÷ C.G. × 24 × 45 × 24 × 2 inch feed roll = 233.3.

Using the above constant the draft with a 38 draft gear would be:

233.3 ÷ 38 = 6.14 draft.

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The number of cotton spindles in Germany increased from 8,000,000 in 1900 to 10,163,000 in 1909, or 27 per cent.

## CARD GRINDING.

(From the Grinding and Mounting of Card Clothing recently published by Dronsfield Bros., Ltd., Oldham, England.)

(Continued from June.)

Before the machine can be put in motion, it will be necessary to wind up the automatic feed gear to the point marked "Top;" the flats are then set down again by the handle until contact with the roller is gained, at which point the machine will feed automatically, and the attendant may leave it and do what other work he may be engaged upon. These three flats will continue feeding until they reach the bottom or stopping point—the same point attained by the first flat. This routine is repeated for each lot of three flats, until the whole set is completed. As will have been gathered, the higher flats will commence grinding at, say six or seven marks, but the stopping point determines that all the flats shall cease grinding when they have attained the finished height of wire possessed by the first flat. Should any flat possess more than eight marks of irregularity, it must be passed twice through the machine.

By this means flats may be ground perfectly true in carding position, with the wire down. The three flats are traversed by a patent arrangement of our own invention, which gives an equalized traverse, and consequently equal contact with the grinding roller. The seating plates carrying the flats are secured in heavy slides, which, in traversing to and fro, carry the flats in a line parallel with the grinding roller, permitting the roller to grind the full face and the full width of the flat surface.

3. Rollers and Clearers: These parts of the roller and clearer card are not difficult to handle, provided the grinding machine is well built and fitted with the appurtenances necessary to the maintenance of cylindricity. At one time the grinding frames in general use were of a primitive character; anything was considered good enough for grinding rollers and clearers; but the old order of things has changed, and the machines in demand at the present time are those of good and substantial build and design. Although

the revolving flat card has replaced to a vast extent the roller and clearer card in mills spinning medium and fine counts, the roller card still holds the field for low counts, and waste spinning especially.

The advance in the manufacture of high grade cards used in the spinning of cotton waste, and the specialization of this branch of spinning, particularly on the Continent, has brought into prominence more than ever during the last few years the demand for high class grinding machines for rollers and clearers as well as for cylinders and doffers.

The patent grinding frame for rollers and clearers, Fig. 24, is one of the various types of machines specially built for this purpose. This is a frame provided with means to grind two rollers or clearers at the same time. It is fitted with an emery roller of 12 inches diameter, carrying its own traversing motion. On either side of the machine is arranged a patent center setting arrangement, by means of which the card roller is set up to the grinding roller, both ends simultaneously, by gearing actuated by the center hand wheel. This arrangement guarantees parallel grinding of the card roller, and obviates any possibility of oblique grinding. The machine is fitted with top and bottom covers to enclose the grinding dust, which is drawn off by a fan placed under the machine. The grinding frame illustrated is only one of diverse types; we make also machines for grinding one, two and four rollers at a time, all fitted with the patent center setting motion, and all provided with fans.

### STRIPPING OF CARD FLATS.

We have not touched upon the stripping and burnishing of cards, having the intention of dealing only with the mounting and grinding; but there is one point upon which we think it worth while to write,—the stripping and burnishing of card flats, and this only for the reason that the operation is allied to grinding. A word or two on burnishing first.

We are not sure that burnishing of card flats is altogether a good thing, and in our opinion, with proper grinding instruments and careful setting, much of the burnishing might be well dispensed with. The action of card wire running against the flat clothing has a tendency to rob the flat teeth of their points. It will be said that the object of burnishing is primarily to remove the "barbs" caused by grinding, but, with due care, barbs may be avoided; heavy setting is usually the cause of these, as previously mentioned. Another reason for burnishing is the removal of dust and short fibers. In respect to the accumulation of both these matters, the spiral bristle brush is frequently at fault, and with this we will deal. Many spinners, having paid careful attention to the grinding of flats, have dispensed entirely with the burnishing roller, stating that it was sheer waste of time to grind a good carding point in order to take it off again by burnishing. If the removal of short fibers and dust by burnishing is considered necessary, why not "burnish" before grinding?

The stripping of flats is accomplished by means of an oscillating comb, which in its downward stroke draws from the flats the fibers within reach. Any short fibers, seed and shell embedded in the flat clothing, left by the combing process, are taken away by the flat stripping roller covered with spiral rows of bristle.

It frequently happens that the bristle roller is incapable of withdrawing and collecting this fiber and broken seed, with the result that it accumulates in the foundation of the flat and forms what is known as "felting." Felting is deleterious to good carding, inasmuch as it clogs the spaces between the wire teeth and causes the teeth themselves to be bent, or, as it is termed, "dog-legged."

With clean long staple cotton the ordinary bristle roller, properly set, clears the flats in a satisfactory manner; but with dirty short staple cotton, such as Indian, in which the broken seeds are prominent, it is a very difficult matter to escape "felting." It is a mistake to set the brush deep into the flats, imagining that same will clear the accumulated matter; in fact, such a procedure increases the felting of the fiber, and forces the seeds further into the wire.

The only way in which the flats may be

cleared is by picking, either by hand (a tedious method) or by mechanical means. Many carders make use of the burnishing roller for this purpose, but, apart from being unsatisfactory, it is a dangerous instrument, as it is necessary to set it deep into the wire, with the result that the foundation cloth of the flats is frequently scratched or "napped," and the teeth are loosened. Neither the bristle brush nor the burnishing roller possesses the essentials for picking out this felting, as both revolve simply upon their own axes, and have not the peculiar motion necessary to pick out the fiber from between the mass of wire teeth; all that they can do is to drive out from the sides of the flats such matter as will penetrate through the teeth. With seed-choked flats one can well understand the difficulties in this direction.

Fig. 25 shows an apparatus specially constructed to clear flats of all impurities, which the ordinary stripping roller fails to take out, —the Rhodes patent self clearing flat cleaner. One of these machines will serve for a number of cards, according to condition, being transported from card to card.

The section, Fig. 26, illustrates clearly the construction of the apparatus. A is the central driving shaft; B, a spiral bristle roller; C, a wire stripping roller; D, a circular comb, which collects the fiber, etc., from the brushes while at work; E, revolving end discs, carrying B, C, and D; F, comb guard; G, flat.

The apparatus runs in the bristle roller steps, replacing the ordinary stripper for the time being; it is driven by the same rope, from the same pulley as the latter. The revolution of the brushes and comb is actuated by gearing in the end discs. The brushes, B and C, revolve on their own axes as well as round the central shaft, thus causing a double motion; they pick and sweep simultaneously.

The bristle brush, B, penetrates deeper than the wire brush, the object being to prevent the wire from reaching to the foundation and spoiling the cloth. The wire brush first acts upon the felting and loosens it ready for the bristle brush to collect, both transferring to the comb. After the card is thoroughly cleaned, the guard over the comb is lowered and the comb cleared.

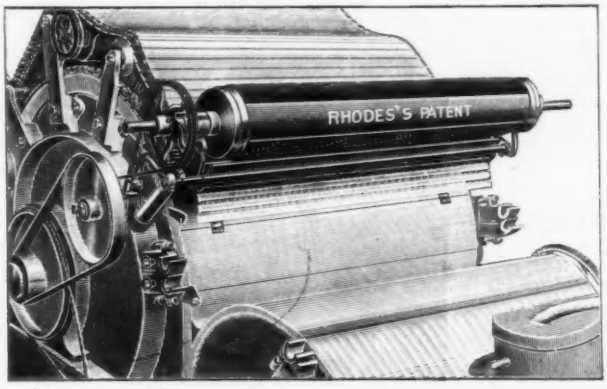


FIG. 25.

(To be continued.)

The imports of cotton cloth into the Philippines from the United States in 1909 amounted to $716,147, an increase in value of $180,671.

For the three months ending March, 1910, the exports from Manchester, Eng., to the United States and the Philippine Islands amounted to $4,374,630, compared with $4,164,174 for the same period of 1909. Cotton and worsted stuffs advanced from $28,609 to $64,306: cotton yarn, from $692,411 to $801,950; handkerchiefs, $36,785 to $77,042; machinery, $243,554 to $577,969.

# Questions and Answers

Under this head we undertake to answer, free of charge, to the best of our ability, questions pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

If the question is not of general interest to textile readers and involves expensive investigation, a charge covering the cost may be made, of which the inquirer will be advised before any expense is incurred.

### Stains on Knit Goods.

*Editor Textile World Record:*

I enclose a sample of cotton underwear boiled in a solution of caustic soda in an Allen pressure kier. The soda is first put in the bottom, the rolls of cloth run in the kier, which is then filled up with water and boiled for six hours at a 15 pound pressure. Can you give me some remedy for the spots that appear in the cloth?

Spencer (1200).

This stain is due to the effect of iron which must come in contact with the liquor during the process of boiling. The caustic turns the iron residue into a black stain instead of a red iron mold. I feel sure that if I should ask "Spencer" where these stains occur he would say either on the top of the kier or at the bottom, for as a rule they do not appear in the body of the kier.

When the goods are boiled the decomposition of the waste refuse in the cotton, the action of the caustic on the iron and the sediment from the water forms a foam inside the kier and it is this foam that is boiled into the goods, producing the stain. The stain might be still plainer if the kier has not been filled up with water, as this leaves the goods exposed and gives the residue a better chance to settle in the goods.

The first thing is to give the kier a good lime washing, cleaning it out thoroughly. This should be done frequently to prevent the iron from becoming bare. Always see that the kier is filled up to the required amount with water, having the goods covered completely. Let the caustic solution run in with the water. If this does not remedy the difficulty examine the pipe connections and inspect the boilers to see if there is any scale inside. If chemicals are used to clean off the scale see that they are used properly. If none of these preventatives are effective, the stains might be removed as follows:

After the goods are boiled, separate the stained parts and give them a strong bath in hydrochloric acid at 2° Tw. If the stain is very heavy use a stronger solution. If this method does not help matters, put the goods in a chloric bath and then a brick sour in hydrochloric acid with washing. I enclose the sample submitted with the stains removed by the above mentioned process.

Alpha.

### Stiff Latches.

*Editor Textile World Record:*

We are manufacturing mufflers and are getting a lot of needles with stiff latches caused by lint getting in. Kindly inform us how to get the lint out. Is there a solution that we can use?

Manufacturer (1194).

I have never had any trouble of this kind except with yarn that had previously been run through some gummy solution before being delivered to the needles, either at the winder or knitter. I have examined the sample needles and find the lint the same as when the yarn has been treated with lard or other oil solutions. If "Manufacturer" will use dry paraffine instead of the solution he is using, the trouble will be remedied. I usually melt the paraffine and mold it in large discs, putting one disc on top of the other and running the yarn between the two, which are so arranged as to revolve as the yarn passes between them. By doing this the discs will wear down evenly and can be used much longer and with a more even tention than if the yarn was simply run over a cake of paraffine. In the latter case the yarn cuts into the paraffine necessitating frequent remolding. The latter method,

however, is the simplest for experimental purposes and will give nearly the same result. Madison.

### An Ad Valorem Duty.

*Editor Textile World Record:*

There has been much talk in your and other textile papers regarding "ad valorem" duty on greasy wools, and although I have looked for some of these publications to give a clear definition of the term "ad valorem" I have so far been disappointed. Wallace (1190).

The term "ad valorem" is a Latin expression meaning "according to value." An ad valorem duty is one in which the rate is a certain proportion of the value of the material, thus a duty of 20 per cent. ad valorem on $2,000 worth of goods would be 20 per cent. of $2,000, or $400. A specific duty, on the other hand, is one which is assessed regardless of the value, the rate being a fixed amount per unit of measurement, either of weight, area, length or whatnot. For example, the present duty on wool of the first class is a specific duty of 11 cents a pound.

### Equivalent Counts of Single and Ply Yarn.

*Editor Textile World Record:*

We would like to have you explain a method of finding what numbers are required for fine yarns when used double or treble to make the same weight of knit goods as a coarse single yarn will make. Can you help us? Acropolis (1193).

The problem is very simple if the two or three-ply yarns consist of single strands of equal size. We will assume that the yarn is numbered by the fixed weight system of counts:

Ex. What is the count of the yarn required for two-ply cotton yarn to equal a single 20s?

$20 \times 2 = 40$s, count required.

Ex. What is the count of the yarn required for a three-ply cotton yarn to equal a single 15s?

$15 \times 3 = 45$s, count required.

If the yarn is numbered by the fixed length system the calculation will be as follows:

Ex. What is the count of the yarn required for a two-ply cotton yarn to equal a yarn weighing 50 grains per 120 yards?

$50 \div 2 = 25$ grains, count required.

Ex. What is the count of the yarn required for a three-ply cotton yarn to equal a yarn weighing 66 grains per 120 yards?

$66 \div 3 = 22$ grains, count required.

The method of calculation is the same regardless of the particular weight or length on which the count may be based. Thus, the first calculation would be the same for runs, worsted, linen or other fixed weight system of numbering yarn. Likewise the second calculation would be the same for grains per 100 yards, 50 yards, drams per 1,000 yards, deniers per 400 aunes, or any other fixed length system of numbering yarn. This applies also to the calculations which follow.

If the two or three-ply yarn consists of single strands of different sizes the calculation is as follows when numbered by the fixed weight system:

Ex. What is the count of single cotton yarn that must be doubled with single 40s to equal single 15s?

$(40 \times 15) \div (40 - 15) = 24$s, count required.

Ex. What is the count of single cotton yarn that must be run with a single 40s and a single 24s to equal a single 12s?

We first find the count of the 40s and 24s:

$(40 \times 24) \div (40 + 24) = 15$s.

Then the question is to find what count must be run with 15s to equal single 12s:

$(15 \times 12) \div (15 - 12) = 60$s, count required.

If this yarn is numbered by the fixed length system the calculation is as follows:

Ex. What is the count of single cotton yarn that must be doubled with 25 grain (per 120 yards) yarn to equal a single 66 grain yarn?

$66 - 25 = 41$ grains, count required.

Ex. What is the count of the single yarn that must be run with a 25 grain and a 41 grain yarn to equal an 83 grain yarn?

$83 - (41 + 25) = 17$ grains, count required.

If the yarns are numbered by different systems it is necessary to reduce them to a common basis.

Ex. What is the count of single cotton yarn that must be doubled with single 60s worsted to equal single 15s cotton?

60s worsted = 40s cotton.

Then:

(40 × 15) ÷ (40 — 15) = 24s cotton, count required.

### Marking Buttons for White Goods.

*Editor Textile World Record:*

We have difficulty in marking buttons for white goods. If we use red or blue pencil the marks will not come off. Kindly give us some information on this subject. Dawson (1189).

It does not seem possible that anyone could get into difficulty over such a trifle as marking buttons, and the best advice I could give would be to weed out some of the help. I might say, however, that I never allow a colored pencil to be used for button marking except on black goods. On all other goods the markers use a common lead pencil, making a small dot where the button is to be sewed on. A little care in sharpening the pencil so that the lead does not show through the wood too far is all that I have found necessary. Madison.

### Card Production.

*Editor Textile World Record:*

Some years ago I had a constant number to use in getting the production of cards. This number was to be multiplied by the revolutions per minute of the doffer, and I cannot remember how it was obtained. Can you give me any information how to figure such a number?

Carder (1201).

In calculating the production of a card the following rule is used:

(Circ. doffer × r. p. m. × wt. sliver × min. per day) ÷ (36 in. × 7,000 gr.).

This gives the production in pounds per day, but allows nothing for loss of time due to stripping, oiling, cleaning, etc. To overcome these losses it is usual to allow 10 per cent. from the total time the mill is run to give the actual time we can expect the cards to be in operation.

The work of finding out the production of a card is greatly lessened by using a production constant or constant number. The constant I use is applicable to any card that has a 27-inch doffer. Other sizes of course would need a different constant.

The production of a card is found as follows by the use of the constant:

Constant × r. p. m. × grains per yard of sliver. This gives accurately the pounds per day per machine. The method of determining this constant is to take the ordinary formula used for finding the production, as given above, and throw out those figures that may vary from time to time, using the balance as the formula indicates. To illustrate by actual figures we will work out the production for a card with a 27-inch doffer, making 12.5 r. p. m., delivering a 50-grain sliver, based on a 10-hour day and allowing a loss of time of 10 per cent.

A 27-inch doffer will measure 27.75 inches in diameter when clothed. The circumference, as measured on outside of clothing is 87.18 inches. There are 600 minutes in a 10-hour day and with a loss of 10 per cent. the time run is 549 minutes. Using our formula we have:

(87.18 × 12.5 × 50 × 540) ÷ (36 × 7,000) = 116.75 lbs.

This represents about what a card will produce under the above conditions. The production will vary to some extent as the amount of time lost is not a fixed amount, but varies in different card rooms and from day to day.

In the above formula the factors that vary are the r. p. m. of the doffer and the grains per yard of the sliver. The remaining figures will be the same, so if we eliminate the two variable quantities, the formula will look like this:

(87.18 × 540) × (36 × 7,000) = .187, constant.

Following the rule as given, we will get:

.187 × 12.5 × 50 = 116.87 lbs. per day. This result coincides with the one obtained before.

It is possible to consider the r. p. m. of doffer as the only variable quantity and work out a production constant that will be used as stated in the inquiry, but it will not be applicable except when running that particular weight of sliver on which it is based, hence it is not as useful as one that is not subject to such limitations.

There is another constant sometimes used, but which is not quite so accurate. It is derived by a similar method of elimination and is 5.5.

Using the doffer speed and sliver weight with using this constant we get:

$(50 \times 12.5) \div 5.5 = 113.7$ lbs. per card per day. This is not so accurate as the first constant, but will answer in many cases.

The whole idea in figuring to get a production constant is to take the ordinary production formula and eliminate those quantities that are liable to vary from time to time. B. M. P.

### Sizes of Boys' Sweaters.

*Editor Textile World Record:*

Please give us the standard sizes for boys' sweaters, sizes 24 to 34 inclusive.

Victor (1192).

The most acceptable line of boy's sweaters that we get are made on the following scale of sizes:

| | | | | | | |
|---|---|---|---|---|---|---|
| Size | 24 | 26 | 28 | 30 | 32 | 34 |
| Length | 15½ | 16½ | 17½ | 18½ | 19½ | 20½ |
| Width | 11 | 12 | 13 | 14 | 15 | 16 |
| Length of Sleeve | 13 | 14 | 15 | 16 | 17 | 18 |
| Size of Armhole | 5 | 5 | 5 | 6 | 6 | 6 |

Fillmore.

### Vigogne Yarn.

*Editor Textile World Record:*

I am informed that the enclosed sample of vigogne yarn, or in fact any vigogne yarn, is not made in this country. Can you tell me where it is manufactured?

Manufacturer (1199).

The sample enclosed was a cotton and wool mixed yarn. Our French correspondent in replying to this inquiry gives the following account of the genuine vigogne fiber and the fabrics made from it:

Of all the special wools obtained from South America such as lama, guanaco, alpaca, vigogne, etc., it is the last named which excels all the others. The vigogne hair is used in the manufacture of shawls, fishing nets and cloaks. The different shades of vigogne hair are first separated. The inhabitants of the countries where vigogne hair is grown produce a very solid fabric from it which compares favorably with the best grades of wool goods. It is completely waterproof and at the same time fine and light. The best vigogne fabrics come from Catamarca in the Argentine Republic. Since 1890 an imitation of vigogne has been made. This consists in mixing wool and cotton in variable proportions. In many cases the wool is replaced by the hair of the angora rabbit and sometimes of the ordinary rabbit. I will try to send you a few samples of vigogne fabrics in a few days. Gaul.

### Cost of English Worsted Mills.

*Editor Textile World Record:*

Can you give me an idea of the approximate cost of building and equipping worsted mills in England? Berkshire (1198).

An English correspondent replies as follows:

The cost of worsted mills in this country, England, varies in different localities and at different times, but the following is an approximate estimate of the various items.

1. Cost of Land. This varies widely. Prices ranging from 1s (24 cents) to 5s ($1.20) a square yard have been paid for freehold sites. Formerly all mill sites were sought as near to populous districts, railways and canals as possible, but now the rule seems to be to build on the outskirts of towns, where the land is cheaper. The difficulty and loss of time in the conveying of raw material to the mills, and the delivery of the finished article, has been overcome by the adoption of motor traction. Since the formation of county councils, practically the whole of the highways in the country are kept in an admirable state, favorable to heavy traffic. Again whenever new factories have been erected in thinly populated parts, care has been taken to secure enough surplus land so that houses for the workers can be erected. Finely equipped systems of tramways, owned in most cases by corporations, link up the whole of the manufacturing districts of Lancashire and Yorkshire, some of which carry goods as well as passengers. This, and the low prices charged enable employes to get to and from the mills with very little inconvenience.

2. Power. Another item which counts in the cost of the land is the water supply. If there is an abundant supply of water on the site, suitable for use in manufacturing purposes, this naturally adds to the value of it. The proximity of a good coal supply will not count for so much in the future as it has

done in the past. As electric power comes more into vogue, large central stations will supply the various factories and thus not only lessen the cost of power, but also leave the roads free for other traffic.

3. Cost of Building Materials. In the neighborhood of stone quarries, say at Halifax, Huddersfield, Bradford and one or two of the Lancashire towns, nearly all the factories are stone built, while in Leeds and other towns they are built of brick. In some of the most up-to-date buildings reinforced concrete is used. In all of these styles or forms of buildings, even when the same class of materials are used and in the same districts, there is a wide difference in the cost. Style has a lot to do with it. Some are built as plain as a straw barn, while some are as ornamental in their architecture as a town hall. There is the same difference in the interior fittings. Some are built and fitted so as to just comply with the building laws of the district, as well as the requirements of the sanitary authorities, while in others, without being over-elaborate, the best of everything in its class is used.

4. Machinery. This to a great extent depends upon the class of work that is to be carried on. For lower qualities and plain fabrics the cost is much less than that which is used for better and higher class work. A wool scouring machine may cost anywhere from £180 to £1,000 ($900 to $5,000). Carding machines do not vary so much in price. Backwashing machines may be purchased from say £170 ($850) up to almost any price. This depends on the width of rollers, number of cylinders, quality of gill box, and number and style of accessories, such as oilers, bluers, or special system of drying. Gill boxes (single) and punch box cost from £22 to £36 ($110 to $180) each. A Noble, Lister or square motion comb costs from £180 to £240 ($900 to $1,200), according to the cost of extra appliances, etc. The double finishing boxes and first boxes in drawing cost about the same as the gill boxes, while the other boxes, including rovers, are about the same price per box. An ordinary spinning frame costs about 16s 8d ($4.16) per spindle, while the self and automatic doffers will run up to about £1 ($5.00) per spindle. Plain looms cost from £10 ($50) upwards; but in the styles and prices of looms there is a greater range than in any other textile machinery.

No approximate price can be fixed for a worsted mill unless there is some idea of the class of work it is intended to do. Different materials require different proportions of the various machines. A perusal of the articles I have written and articles by other contributors to the Textile World Record will give a fair idea of what is required for particular branches. John Brown.

## Finishing Bed Spreads.

*Editor Textile World Record:*

I would like to have some information regarding the method of finishing bed spreads in order to obtain the satin finish like the enclosed sample. What drugs and chemicals are used and what is the process? Hunter (1185).

A finish like the sample submitted can be obtained in several different ways. After the goods are bleached white put them through a three or four-bowl water mangle to get rid of the surplus water, using considerable weight on the machine. They are then ready for the starching, which can be done on a three-bowl mangle, using the following mixture:

30 lbs. cornstarch
25 lbs. potato starch
40 lbs. Epsom salts
10 lbs. soap or a softener.
Blue to the desired shade.

This should be well mixed and boiled in a tub with sufficient water to make 180 gallons when boiled. The spreads should be passed through this solution, then through the starch mangle, squeezing them nearly dry on the mangle so that they will not stick on the dryers.

If the above mixture does not make the spreads firm enough, the following may be used:

50 lbs. cornstarch
35 lbs. potato starch
50 lbs. Epsom salts
10 lbs. dextrine
3 gals. flour at 24° Tw.

3 gals. China clay mixed at the rate of
1 1/2 lbs. clay to 1 gal. of water.
Blue to shade required.

This mixture should be well boiled and the goods passed through it. Besides making the goods firm, the addition of China clay will increase their weight. Care must be taken that the goods do not go through too wet, as that will cause a lot of trouble on the dryers.

To add weight to the spreads when starching them use a little extra China clay or Epsom salts or sulphate of lead, always using enough starch to bind the mixing together. The mixtures can be varied until the required feel is obtained. If a thick and pliable feel is desired a good quantity of softener, soluble oil, cocoa oil or other softening ingredient can be used in the mixing to keep the goods from being too stiff.

After the goods are starched there are several methods of drying them. Some use a tentering machine, cylinders with reels attached, or upright dryers with rollers attached. When drying them on these machines only the wrong side of the spread touches the hot cylinder. In this way the floral design or pattern is raised by the action of the steam.

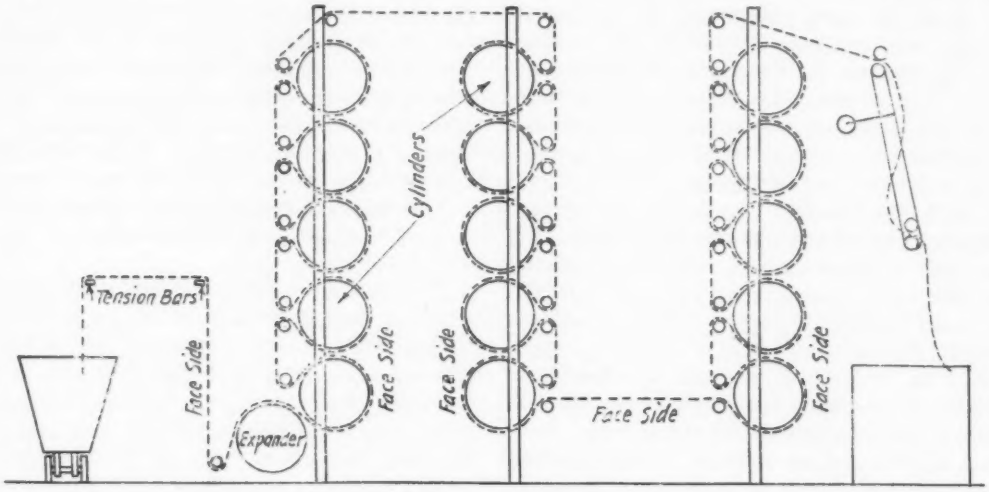


FIG. 1.

Fig. 1 shows the upright cylinders with roller attachment. Fig. 2 shows the horizontal cylinders with the reel attachment.

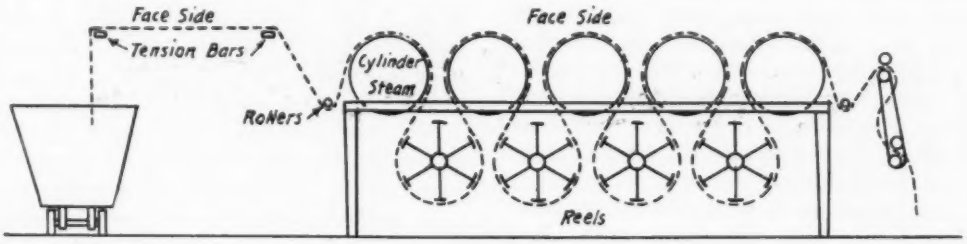


FIG. 2.

The tentering machine is well known in the trade for raising the pattern by the action of passing over the tenter frame. The greatest difficulty I find in finishing spreads is to get them straight and even, for after going through the bleaching process they are pulled crooked, and it is difficult to get them straight. The tentering machine assists in overcoming this difficulty. Delco.

# Knitting Department

## THE KNIT GOODS SITUATION.

Manufacturers and selling agents, representing the knit underwear end are again beginning to wear a cheerful smile, as the selling season for the spring of 1911 gradually approaches. Practically all lines were opened about June 6th and considerable business was placed during that week, especially on men's balbriggans, but it is expected that the first two weeks in July will be the time when most buyers will be in the market to clean up the bulk of their purchasing.

The reason for a large volume of business being placed on men's balbriggans, especially the low end, was the apparent low price at which these goods were opened. The manufacturers of this class of merchandise agreed in May to show no samples and quote no prices until after June 6th, and it was expected by many that advances from 5 per cent. to 7 1/2 per cent. over last year's prices would be asked. However, the date for opening came, and it was apparent that a number of manufacturers had decided to speculate on this end of the business, and in some cases, the same prices as were named last year were made and in other cases, only slight advances, ranging about 2 1/2 per cent. were asked. This, we believe was quite surprising to the majority of the buyers who were in the market, but it had the effect of cleaning up considerable of that end of the business.

The Stewart mill, at Amsterdam, opened with a garment as low as $1.62 1/2 for single seated drawer made with two buttons, with shirts at $1.72 1/2, or with three button double seated drawer at $1.77 1/2.

The Diana Knitting Co. also have a garment running from 4 1/4 to 4 1/2 pounds at $1.77 1/2. They also show a ribbed tail shirt at $1.92 1/2.

The Perry Knitting Co. are offering a 4 pound balbriggan at $1.70 and a 4 1/2 pound garment at $1.75.

The Brown Knitting Ca., of Warsaw, are asking $1.75 for their line, while Robert MacKinnion & Co. have one at $1.70 with rib tail and double seated drawer, but the weight of which is 3 1/2 to 3 3/4 pounds. The Gilbert Knitting Co. have maintained their prices the same as last season, which is $1.75 for shirts and $1.85 for drawers on their 4 1/4 pound line, and $1.90 for shirts and drawers on their 5 pound line.

The Oneita Knitting Co. have one at $2.62 1/2 and the Utica Knitting Co. have a 5 pound line at $2.85.

The 50 cent grades of men's balbriggans have all undergone a very material change from last year, in that they are being made this season from a standard yarn instead of from Egyptian stock as formerly. Egyptian yarns have advanced so much during the past year that it is said to be entirely out of reach for 50 cent garments for 1911, but by maintaining the same weights and finishes as last year and by using the stained yarns, manufacturers are enabled to name the same prices.

The Ford Knitting Co. are showing a 5 pound balbriggan, a good imitation of their Egyptian garment of last year, at $3.25. The Lebanon Co. claim to have booked a heavy business on their line made from standard yarn at $3.50. These run about 5 1/4 to 5 1/2 pounds in weight.

The sale of men's ribbed summer weight goods has decreased considerably during the past two or three years and now there are only a few manufacturers making them. The contention is, that ribbed goods are too heavy and warm for summer wear. Morris Mills of Amsterdam are showing their line with striped collarette and double seated drawer at $1.90. These people also make a combed line at $3.05.

The Canasawacta Knitting Co. are showing a line of low priced ribbed combination suits in ecru, blue and salmon at $3.62 1/2, and it is understood from several buyers

that they have placed some very liberal orders on this line of merchandise.

The Gilbert Knitting Co. are offering for sale a well trimmed, sightly appearing line of porous shirts and drawers for men at $2.50 that is being well spoken of by the buyers in the market. It is understood that these people contemplate making a combination suit of the same fabric to sell at $3.50 to $3.75. The Avalon Knitting Co. are also offering a line of porous knit shirts and drawers to the trade at $3.25 with suits of the same cloth at $5.50. These people also make a line of ribbed combination suits at $6.50 in white and Egyptian on which it is stated fairly good sized orders have been placed.

The unseasonable weather prevailing during the month of May had the effect of curtailing the demand of light weight merchandise of all descriptions and stocks in the hands of jobbers and retailers on June 1st is reported to have been quite heavy. These, however, are being lowered rapidly at this writing, and with a continuance of the warm weather that now exists throughout the country, it is believed that stocks will be in good shape, so that when buyers are in the market in the month of July, they will not be handicapped by feeling that there will be any great quantity carried over.

### HOSIERY.

There is some complaint among manufacturers and agents that buyers are not showing quite the amount of enthusiasm in placing orders for hosiery that they have thus far in the underwear end, but this will probably adjust itself in the near future, as there can be no good reason for any delay in placing hosiery orders at the prices now being named. All lines are open and many of them at practically last season's prices and some few of them with advances of only from 2 1/2 to 5 per cent. An instance of one advance is 1 lb. 8 oz. goods that were sold last season by several manufacturers at 67 1/2c. and by one or two at 65c., that are now priced generally at 70c.

A number of hosiery buyers have been in the market and some business has been placed, but it is felt by many that buyers in general are waiting until after the first of July, at which time it is expected the bulk of the business will be done.

Duplicating on fall lines of hosiery has reached considerable volume during the past month, and some slight advances have been asked on the heavy weight cotton lines.

Business on wool hosiery has been unusually quiet and it is reported by jobbers that orders placed by retailers so far on wool numbers are somewhat smaller than last year.

Chemnitz manufacturers are showing much concern over the condition of affairs in that hosiery producing section. The new tariff arrangement seems to have had the effect of curtailing, to a considerable degree, the exportation of full fashioned goods to this country.

Another reason for the falling off in the demand for full fashioned hosiery, not only that coming from Chemnitz, but domestic manufactured fashioned goods, as well, is the fact that there is a strong tendency on the part of the consumers to buy goods made with seamless feet. This is due to the extensive advertising being done by several manufacturers of seamless goods and we understand that some of the Philadelphia manufacturers who have been making fashioned goods for several seasons are now showing some lines made with seamless feet, and we have the statement of one of the large buyers that the stocking of the future is to be one with seamless foot and fashioned leg.

Silk hosiery has begun to play a very important part in the several manufacturers' lines. Some attractive looking numbers are being shown as low as $3.50 for men's and $3.75 for ladies' goods, and nearly every line has numbers of silk hose to retail at 50c., 75c. and $1.00. William F. Taubel is showing a particularly attractive number in half hose made of pure thread silk with lisle thread tops, heels and toes at $3.62 1/2.

### SWEATER COATS.

Sweater coats for automobile wear have been in good demand during the past two

months and all indications point to a heavy business on this line for fall. The American women have come to look upon the knit coat as a necessary part of the wardrobe. New designs are being shown from time to time and nearly all manufacturers have in their collection a number or two with some sort of an adjustable collar, the idea being to get a collar that will look well when turned down and that can be altered to storm collar effect when needed.

For golfing and out of door sports in general, short length coats to reach just below

FIG. 1.

the hips are being chosen, but for automobile and evening wear, those running 36 to 39 inches are the more desirable.

A novelty recently introduced is a long coat, knit in a checkerboard design, made with a wide shawl collar, the collar and band down the front and round the bottom, as well as the cuffs, which are made to turn back, are made in a plain stitch. This makes a very sightly looking garment and will undoubtedly prove to be a good selling number.

Over 3,000,000 pairs of blankets are woven in the United Kingdom annually.

## KNITTING NECKTIES.

*BY LARAMIE.*

Knitted ties are being sold at present as high as $2.50 and $3.00 apiece, but these, of course, are hand made and of pure silk. The 50 cent quality are worn more than ever. Fig. 1 is made on a two-feed machine using two colors of silk. One wheel is cut two and two the other wheel being plain. There are an even number of cuts on the wheel, which is cut two and two. The cylinder has an odd number of needles, giving the tie a diagonal effect. They can be made in some very pretty combinations of colors, such as black and purple, bright red and dark green, white and black, etc.

Fig. 2 is what is called a double tie, as it can be worn on either side and giving a change of effect as with two different ties. This tie can be made in two ways. First the cylinder can be arranged so as to have a short latch needle alternate with a long latch needle half way around the cylinder, and the

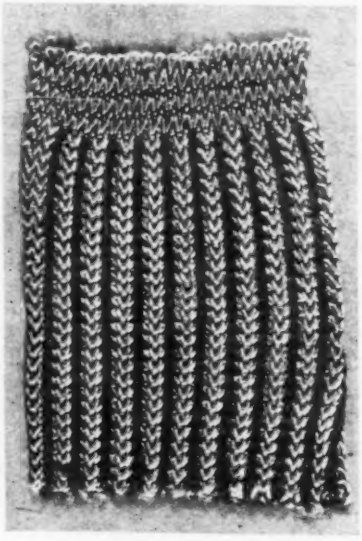

FIG. 2.

other half can be all long needles, using no wheel. The second way is to have the long latch needles half way around the cylinder, and the other half short latch needles, using a wheel cut one and one with the exception

of one place where a place is left for two needles to cast off, making the wheel an odd one as the cylinder has an odd number of needles in it. On the other feed use a wheel cut one and one with the exception of one place where the wheel is cut so that two blank spaces hold the stitch onto two needles together, and then every other needle casts off on one feed and holds the stitch on the other feed. Of course, this naturally affects the long latch needles on one-half the cylinder, as the short latch needles will cast off on both feeds regardless of the wheels, giving a vertical stripe tie on one side and a plain tie on the other.

Fig. 3 is a diagonal wide stripe tie which makes up very well, being made with all long latch needles in a cylinder having an odd number of needles and a wheel which is

FIG. 3.

cut eight slots on one after the other, then eight plain and so on, making an even number wheel. An extra tension has to be put onto the silk which is not the diagonal stripe, so that it will not show through onto the stripe. This tie is made in such colors as black and purple, black and red, black and white, etc.

## PIECE WORK SYSTEM ON UNDERWEAR.

*BY MADISON.*

The piece work system, from the yarn to the finished cloth, in knitting mills must usually be worked out to suit the conditions and class of work the particular mill may be running on. On account of these conditions and the variety of work there does not seem to be any universal system used. Take from the cutting to the boxing, however, the work

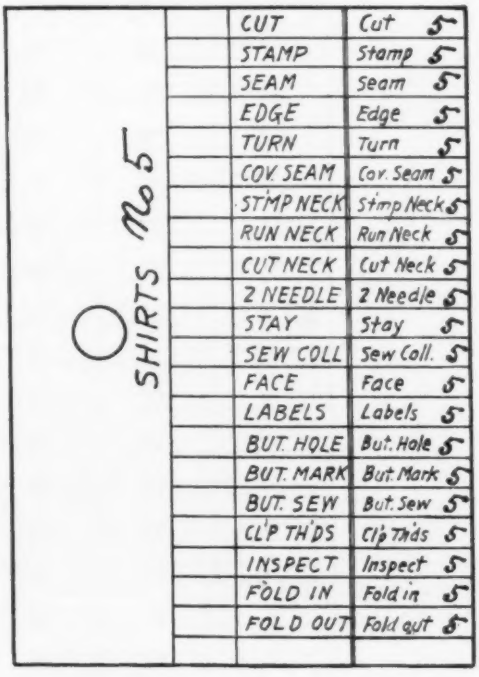


FIG. 1.

in every mill must necessarily be very much the same, and therefore, every mill could adopt practically the same system. In my opinion the check and coupon system is the best one and any mill not using it is certainly not up to date. The attached checks will explain this system thoroughly. As soon as the goods are cut, the ticket or check shown at Fig. 1 is tied on each dozen and as the goods pass through each operation the operator cuts a coupon off and pastes it in her book, of which Fig. 2 is a sample page. Each page holds one hundred

coupons and every square is numbered so that it is not necessary to count the coupons, as a glance at the number of the last square filled in shows the number of coupons pasted in or the number of dozens completed.

The mill can have its own prices and to have the price paid for the operation printed on the pasting-in coupon. Each check should be numbered and each pasting-in coupon should have the same number as the check has. This provides a system by which lost checks are located. For example,

Tear off here as stated on the Cover

No Allowance made for Lost Coupons. Imperfect work will not be paid for. A fine will be assessed for work Damaged by carelessness

Operation ..... Price per Dozen .....
OPERATOR ..... Total Amount .....

| Cut 8 | | | | | |
|---|---|---|---|---|---|
| 1 | 18 | 35 | 52 | 69 | 86 |
| 2 | 19 | 36 | 53 | 70 | 87 |
| 3 | 20 | 37 | 54 | 71 | 88 |
| 4 | 21 | 38 | 55 | 72 | 89 |
| 5 | 22 | 39 | 56 | 73 | 90 |
| 6 | 23 | 40 | 57 | 74 | 91 |
| 7 | 24 | 41 | 58 | 75 | 92 |
| 8 | 25 | 42 | 59 | 76 | 93 |
| 9 | 26 | 43 | 60 | 77 | 94 |
| 10 | 27 | 44 | 61 | 78 | 95 |
| 11 | 28 | 45 | 62 | 79 | 96 |
| 12 | 29 | 46 | 63 | 80 | 97 |
| 13 | 30 | 47 | 64 | 81 | 98 |
| 14 | 31 | 48 | 65 | 82 | 99 |
| 15 | 32 | 49 | 66 | 83 | 100 |
| 16 | 33 | 50 | 67 | 84 | |
| 17 | 34 | 51 | 68 | 85 | |

FIG. 2.

operations stated, but the system itself should not be altered. The inner row of operations is always left on the check and the blank space is for the operator to write her number so that a glance at the check after the goods are completed will show the operator on each operation, thereby tracing any errors or bad work. It is a good plan a dozen of goods with check No. 5 may get to the seaming and the operator will claim that the seaming coupon was cut off before she got it. The foreman must take the operator's word for it and allow her for the lost or stolen coupon. He takes the number of the check and operation and this No. 5 seaming coupon is recorded in the pay

clerk's office and should it be found pasted in any other operator's book, it is reported to the foreman, who is then able to locate the mistake or the dishonest operator.

This check and coupon system can also be used as a checking system in locating the goods.

## A CAM CYLINDER FOR KNITTING MACHINES.

A sectional cam cylinder for knitting machines has recently been patented by an American inventor, who gives the following account of it:

It is now the common practice to make cam cylinders for knitting machines in two sections, one of which is removable from the other, the removable section being that portion of the cam cylinder which carries the needle-operating cams and switches. This construction has been adopted because the needles are apt to jam and become stuck in passing through the raceways of the stitch cams and other needle-operating cams. By making that portion of the cylinder removable from the main portion of the cylinder, ready access to the cams can be secured for releasing the jammed needles by simply removing the removable section from the cylinder.

Furthermore, the needle-operating cams are the parts that are subjected to the greatest wear and are most likely to become broken, and by making the section of the cylinder carrying these cams removable, the repair or renewal of the worn or broken parts is facilitated.

Heretofore in making the sectional cam cylinders, it has been customary to first cast the cylinder complete and then to remove a portion at the place where the removable section is to be located and to make the removable section entirely separate from the cam cylinder. This necessarily involves the throwing away of the section of the cam cylinder which is removed to form a gap for the removable section, and the subsequent operation of building or making a new cylinder section to fit into the gap in the cylinder.

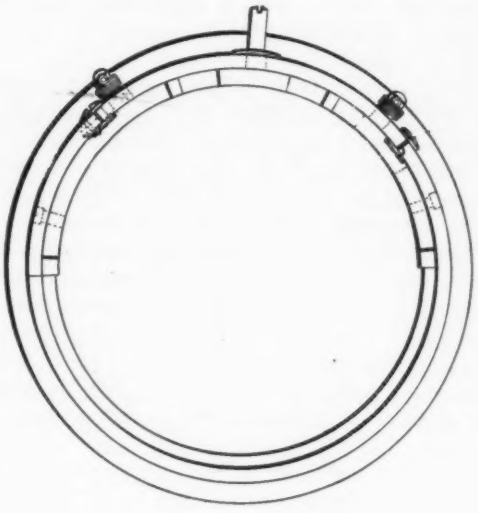

FIG. 1.

In the new construction a sectional cam cylinder is made by first cutting or removing a section of the complete cylinder and then replacing the removed section in the cylinder to form the removable section, carrying the needle-operating cams or other parts that are liable to become worn or clogged. In this way a sectional cylinder can be made from the cam cylinder as it is first cast and

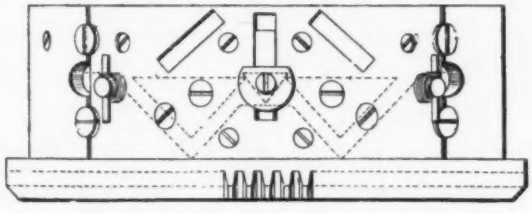

FIG. 2.

FIG. 3.

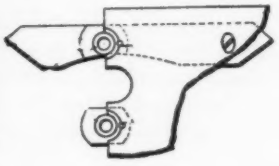

FIG. 4.

without discarding or wasting any portion of the cam cylinder.

Means are provided for detachably securing in place the section of the cam cylinder which has been cut therefrom.

Fig. 1 shows a plan of the new cam cylinder; Fig. 2 in a front view; Fig. 3, a section (x-x) of Fig. 2; Fig. 4 shows the edge of the cam cylinder where it joins the removable section.

The cam cylinder when completed comprises the main section and the removable section, and it has on its inside a plurality of needle-operating cams shown by the dotted lines, Fig. 2. The cam cylinder is made with the removable section by first casting or otherwise making an integral cylinder and then sawing or cutting the cylinder on the lines, a and b, to divide the cylinder into two sections. After the cylinder has thus been divided into two sections, the section which has been removed from the cylinder is put in place again and is held by suitable mechanism.

### Sizes of Sweaters.

*Editor Textile World Record:*

We are in receipt of your May issue and thank you for the information regarding the sizes of sweater coats. At the same time, we call your attention to the fact that the party who gave you these sizes evidently forgot that ladies' and misses' coats come in double breasted and single breasted sizes. Buxton (1195).

I do not see that the proportions of ladies' and misses' sweaters would be any different for double than for single breasted. True there would be the additional cloth in the front of the garment to allow it to lap over, but the measurements are all taken on garments buttoned up, and the fact that a garment is double breasted would not alter its length, width, length of arm, or size of armhole. Fillmore.

In 1870 there were 25,000,000 head of sheep in Germany and in 1907 the number had fallen to 7,000,000. In Austria-Hungary there are only half as many sheep as in 1869, when the country possessed 20,000,000. The least variation has been in England. In 1871 there were 33,000,000 sheep there, and today there are estimated to be 31,500,000.

## KNITTING MILL NEWS.

**New Mills.**

Alabama, Fort Payne. The Mitchel Dry Goods Co. is arranging to equip a hosiery mill.

New Jersey, Atco. Chas. L. Leslie is starting up a small plant for the manufacture of women's hosiery and half hose, operating 3 knitters and 1 looper and finishing the product. He buys 18s to 50s cotton yarns on cones. In a few months he expects to increase the plant.

New Jersey, Newark. Lines of full fashioned silk, mercerized and lisle hosiery will be made by the Rivoli Silk Hosiery Co., incorporated a few weeks ago with capital stock of $10,000. Abraham Gutman is president, Leo. B. Gutman, treasurer and buyer, and D. L. Gutman, superintendent. The plant will be operated by steam power and they will sell the product direct.

New Jersey, Paterson. Early in January, Hugo Huettig resigned the position of manager and secretary of Paul Guenther, Inc., manufacturers of men's and women's full fashioned silk hosiery of Dover, N. J., for the purpose of starting a similar plant. He has just leased space in the new Hall Mill and is installing several German machines.

*New York, Utica. The mill that has been termed the Byington Knitting Mill in recent reports is really the Richelieu Dept. No. 2 of the Frisbie-Stansfield Knitting Co. It has been equipped with 50 knitting machines and 80 sewing machines for making ladies' union suits and is operating under the management of Henry Niermeyer.

*Pennsylvania, Manchester. R. J. Hilliker is treasurer of the Manchester Hosiery Mills and C. H. Markley is superintendent and buyer. They will begin manufacturing July 1, giving employment to 15 hands. As noted in an earlier report, ten knitting machines will be operated on women's 200-needle hosiery.

*North Carolina, Zirconia. It is said it is practically assured that the proposed knitting mill will be established. The company will be organized with capital stock of $25,000, nearly all of which has been subscribed.

*Oklahoma, Frederick. Production of goods will be begun in the Frederick Knitting Mills about November 1. The company will be incorporated with capital stock of $100,000 and will organize with J. W. Blackwelder, president, and B. B. Blackwelder, treasurer. Men's, women's and children's hosiery will be the sole product.

Pennsylvania, Easton. Elijah H. Keiper and Harry L. Keller have established a knitting mill on West Spruce St. and are employing 15 hands.

Pennsylvania, Landingville. The proposed knitting company has been organized under the name of the Landingville Knitting Co. with A. D. Warmkessel, president; H. W. Fehr, secretary, and C. W. Warmkessel, treasurer. Contract has been awarded for a 2-story, brick factory building to Irvin H. Becker of Schuylkill Haven.

Pennsylvania, Philadelphia. A. Wilson Camp-

bell of 1102 West Columbia Ave. is arranging to start up a small knitting plant for the manufacture of seamless hosiery. He will begin manufacturing with 10 knitting machines, but expects to increase the capacity at an early date.

*Pennsylvania, Philadelphia. The Riehms Knitting Co., who have recently asked for a charter with capital of $10,000, will be located at Adams Ave. and Unity Sts., Frankford, where they will manufacture sweater coats. The equipment has been ordered and will be installed and put in operation as soon as delivered.

Pennsylvania, Pottstown. The Arion Knitting Co. has been organized by local capitalists and leased the factory building at South and Montgomery Sts. Walter S. Weber, formerly with the Searles Knitting Co., is manager of the concern. Forty knitting machines are being installed.

Pennsylvania, West Lawn. Geo. W. Bickel and G. R. Miller will establish a knitting plant here under the name of the West Lawn Underwear Co. and will begin manufacturing ladies' Swiss ribbed goods the later part of June in a new 2-story and basement brick building, 30 by 40 ft., with separate boiler house, 12 by 12 ft. They are investing about $5,000 and if the venture proves profitable will enlarge within a short time. Mr. Bickel is at present connected with the Lancaster Knitting Co. of Lancaster, Pa. He will be superintendent and buyer of the new concern and will buy 24s and 26s frame spun yarn.

*Rhode Island, Woonsocket. Manufacturing will be begun in the new Hope Knitting Co. about July 1. There will be 5 knitting machines and 8 sewing machines operated by electric power. Sweater coats will be manufactured from 2/20 wool, 2/26 and 2/20 worsted, and 8 cotton yarns. Wm. A. Tucker is treasurer, manager and buyer and Burton LaFleur, superintendent.

*South Carolina, Aiken. A plant for manufacturing hosiery, boxes, etc., will be built by the Carolina Mfg. Co., previously reported incorporated with capital stock of $10,000. It will be operated by water and electric power, developing what is known as the Wise water power site, which has been leased for a period of 10 years with the privilege of renewal.

*Wisconsin, Mauston. Arrangements have been completed whereby the Portage Hosiery Co., of Portage, will establish the proposed branch factory at Mauston. Money has been subscribed for the erection of a suitable building which will probably be erected on land owned by E. L. Anderson Employment will be given to about 50 hands. While the mill is being erected a few knitting machines will be installed in a building on State St., where the operatives will be instructed in the tending of machinery. J. M. Stickler of Menasha will move the machinery equipment of his hosiery yarn mill to Mauston, operating it in connection with the new knitting mill.

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**Enlargements and Improvements.**

Connecticut, Poquetanuck. The Dunham Hosiery Co. has completed the new boiler house at the rear of the main building and boilers are being installed. The dimensions of the addition are 35 by 50 ft.

Illinois, Belleville. A lot of land on East Main St. has been purchased by the Belleville Hosiery Mill and will be used as a site for a new mill. This company began business less than a year ago to manufacture lines of mercerized and silk hose, operating 24 knitting machines. E. H. Newson is president and Paul F. Vogel is treasurer and buyer.

*Michigan, Grand Rapids. Contract for the erection of the addition to the Globe Knitting Works, to be built on the land recently purchased, has been awarded to Appleyard & Johnson for $20,000. Work will be started soon. The building will be 4 stories high and will practically double the capacity of the plant.

New Jersey, Riverside. It is reported that the William F. Taubel Company, manufacturers of hosiery for men, women and children, of cotton and silk, with branch plants in Philadelphia, and other sections of Pennsylvania, are about to have erected a new four-story addition to their plant, 50 by 150 ft.

New York, Bath. At a meeting of the stockholders of the Bath Knitting Mills, plans were adopted for an early increase in the business.

New York, Philmont. The capacity of the Columbia Mesh Knitting Co. has been doubled since January 1 and they propose further to increase it in the near future. No definite outline can be given at present of changes to be made.

New York, Utica. A charter has been granted the Marshall Knitting Co., with capital stock of $50,000. The new corporation has taken over the business of the Oriskany Falls Knit Wear Co., Oriskany Falls, N. Y., and removed the plant to 846 Columbia St., Utica. The officers have not been elected. Clifton C. Newell and John P. Liddy will probably be president and treasurer.

*New York, Whitesboro. The three-story addition being built for the Anchor Knitting Mills will be used at first for storage purposes and later for manufacturing. There is no immediate prospect of machinery being installed, however.

*North Carolina, Enfield. Arrangements will be made at once for new equipment and supplies to be installed by the Enfield Hosiery Mills Co., successors to the Enfield Hosiery Mills.

Pennsylvania, Philadelphia. The Elk Knitting Mills, 10th and Norris Sts., report that they are installing sufficient machinery to enable them to entirely double the capacity of their plant, in which they are manufacturing high grade ladies' ribbed underwear.

Pennsylvania, Philadelphia. The Alberta Knitting Mills, occupying the third floor of the building at 407 Market St., which was recently damaged by fire, had its plant completely gutted by water. The building is being repaired and the tenants are arranging for the starting of their plants again.

Pennsylvania, Spring City. The Century Knitting Co. is occupying the new building recently completed for them which gives double the floor space formerly occupied. This addition was started last November.

**Mills Starting Up.**

*New York, Newport. The Mohawk Valley Cap Factory of Utica has taken over the old Newport Knitting Mill and will use it for the manufacture of men's and women's underwear. It will be necessary to make extensive repairs and when these are completed manufacturing will be started. It has been rumored for several weeks that the Mohawk Valley Cap Factory was interested in starting the mill, the only difficulty being the supply of operatives.

**Facts and Gossip.**

*Alabama, Cuba. L. Poole, previously reported interested in a plan to establish a hosiery mill to be operated by water power, in Cuba, Ala., advises they are looking for a promoter. They offer a free site and will take $5,000 stock in a knitting mill company.

Massachusetts, Brockton. The Harding Knitting Co. has been dissolved. As noted some time ago, the plant was taken over by the Stall & Dean Mfg. Co., of which W. Franklin Dean is superintendent.

Massachusetts, Northampton. It is said the new hosiery company being organized by D. D. Evans of Springfield is about ready to begin definite preparations for building. The plant will be located either in Northampton or Florence. It is expected something definite will be announced within a short time.

Michigan, Ypsilanti. The J. B. Colvan Co. has been incorporated with capital stock of $5,000 to manufacture silk and lisle union suits and other goods. I. J. Cohn is president, J. D. Colvan, treasurer, superintendent and buyer. The corporation succeeds to business of same name established about a year ago by J. D. Colvan, who was president and manager of Ypsilanti Underwear Company for a number of years.

New York, New York City. The Richmond Knitting Co., recently incorporated, will have lines of knit goods made on contract. W. H. Jack is president of the corporation. An office has been established at 203 West Broadway.

New York, New York City. The Acme Knitting Mills have been incorporated with capital stock of $10,000 by Theodore Strassner and Mary Strassner of Brooklyn.

New York, Utica. Another combination of knitting mills which it is said will be larger than the Frisbie-Stansfield Co. is a possibility in the near future. A meeting of representatives of the companies interested was held several days ago and some progress was made toward an agreement. Another meeting is to be held shortly. It is planned to take in two mills that are now idle.

*North Carolina, Elizabeth City. Nothing definite has been accomplished in the matter of locating a new $50,000 hosiery mill in Elizabeth City. The promoters are trying to interest capital.

North Carolina, Raleigh. J. A. Matthews, 242 Tucker St., Raleigh, superintendent and part owner of the Capital Hosiery Mills, contemplates starting a small carpet and rug plant and is interested in machinery equipment and yarns.

Pennsylvania, Boiling Springs. Frank T. McElroy, a hosiery manufacturer, has bought the mill occupied by him for several years.

*Pennsylvania, Philadelphia. A charter has been granted the Mindru Hosiery Mills with a capital of $100,000. They are operating, as previously reported in these columns, a plant for the manufacture of full fashioned hosiery at Marshall St. and Hunting Park Ave., the plant being controlled by Walter Wesendonck & Co., 86-88 Worth St., New York.

Pennsylvania, Philadelphia. Alfred E. Reynolds, Gustav A. Reichelt and Richard Meyer, operating as the Boulevard Knitting Mills, have dissolved partnership, Alfred E. Reynolds having resigned and Joseph F. Collins being substituted as a member of the firm, which is manufacturing women's seamless hosiery of cotton, lisle and mercerized yarns with 40 knitters and 5 loopers, the plant being located in the rear of 3961 N. 5th St.

Tennessee, Knoxville. Hosiery and underwear mills of the South are nearly all supplied with enough orders to keep them running until October or November.

Virginia, Norfolk. The Norfolk Knitting Mills Corp. has been incorporated with capital stock of $50,000. The incorporators are J. Katzenberger, New York, president; C. Brooks Johnston, secretary and treasurer, and Braden Vandeventer. The new corporation takes over the Norfolk Knitting Mills, owned by C. Brooks Johnston, which are equipped with 55 knitting machines and 250 sewing machines for manufacturing men's and boys' balbriggan underwear.

**Personals.**

James Farley, formerly connected with the Tempest Knitting Co., Perry, N. Y., has recently accepted the position of superintendent of the Superior Underwear Co., Piqua, O., taking the place of F. H. Moon, who resigned.

George H. Busiel, foreman at the Belknap Mills Corporation, Laconia, N. H., has accepted a position as assistant manager to assist J. P. Morin.

James Farley has been appointed superintendent of the Superior Underwear Company, Piqua, O. He comes from the Tempest Knitting Company, Perry, N. Y.

# *Dyeing, Bleaching, Printing, Etc.*

## THE DYEING OF UNION GOODS.

*By SOLOMON RIVELIS, winner of the Textile World Record Gold Medal, Philadelphia Textile School.*

The "one bath method" offers more difficulties and obstacles than the dyeing of either wool or cotton separately and so far has proven a success only with those few dyers who made a specialty of this work.

The above statement will be more appreciated if we will consider: The dyeing of

SOLOMON RIVELIS, WINNER OF THE TEXTILE WORLD RECORD GOLD MEDAL.

union goods by the "one bath method" as a double matching of two fibers, having directly opposite properties, in one bath.

Under the best conditions the wool is a little darker than the cotton, and this latter is a great obstacle in dyeing light shades.

Of all the blue dyestuffs there is hardly one good one which will give the same shade on the wool as on the cotton. In order to overcome these difficulties the dyer must know how to select his colors, must have a thorough knowledge of the exhausting properties of the dyestuffs he uses and must be a good matcher.

The direct cotton colors for the use in union dyeing may be divided into the following classes:

Colors that dye the wool darker than the cotton.

Colors that dye the cotton darker than the wool.

Colors that dye the cotton and wool approximately the same.

Colors that dye the cotton from a cold bath.

To these may be added those acid dyes which dye the wool from a neutral bath, but leave the cotton entirely or almost undyed.

Substantive colors that dye:

The Cotton Darker:—Dianil orange G; Chloramine orange G; Diamine fast yellow A; Direct yellow R; Curcumine S; Columbia green; Dianil brown R B D; Zambesi brown G, 2 G; Heliotrope 2 B; Diamine violet N; Benzo violet R; Dianil blue G B R; Diamine new blue R; Diamine blue B, 3 B, B G; Congo fast blue H W; Columbia blue G R; Benzo Azurine G; Zambesi black R; Zambesi black B R; Diamine black R O; Diamine black B O; Diamine black B H; Pluto black C R; Pluto black F.

The Wool Darker:—Dianil scarlet G 2 R; Erika (all brands); Congo Rubine; Dianil green G; Diamine green G; Chicago blue R W; Congo blue B X; Diamine blue R W; Congo orange R G; Columbia orange R; Diamine gold; Dianil yellow G; Pluto brown; Wool brown; Dianil black T; Nainzo black B; Benzo fast black.

Acid Dyes:—Fast red A; Martius yellow; Azo acid yellow; Grimea green B; Grimea violet 4 B; Wool black 6 B, 4 B, G R; Sulphocyanin G, G R, R.

Both Fibers Alike:—Brilliant Geramin B; Brilliant Congo R; Benzopurpurin 4 B, 6 B; Diamine red B, S B; Brilliant orange T A; Dianil orange N; Chrysophenin G; Thiozol yellow; Diamine fast yellow B; Dianil yellow 3 G, 2 R; Benzo dark green B; Diamine green B; Dianil Brown 3 G O; Congo Brown R; Direct fast brown; Pluto brown N B; Diamine new blue G; Diamine dark blue B; Diamine sky blue F F; Chicago blue B, 4 B; Brilliant Benzo blue, 6 B; Columbia black F B; Diamine black H W; Oxydiamine black B M; Direct deep black B R; Direct deep black E W, G.

The method for dyeing unions is very simple and may be expressed as follows: Water, 25 to 15 times the weight of the goods. Glauber Salt, 10 to 20 lbs. per 100 gals. of water.

Start at 140° F., raise slowly to the boil, boil till the wool is dyed up to the shade, shut off the steam and work the goods in a cooling bath till the cotton is matched.

This method is based on the fact that the majority of the substantive cotton colors dye the wool better at the boil and the cotton better at a temperature below the boil.

There is a difference in opinion as to dyeing up the wool first and then matching up the cotton in a cooling bath, or on the contrary, dye up the cotton to the shade and then match up the wool with the neutral dyeing acid dyes.

The only disadvantage with the former, where the wool is to be dyed up to the shade first, is that the temperature cannot be lowered at once after shutting off the steam and there is danger in having the wool dyed up darker than the shade desired. This is a very important matter, as the wool is very hard to strip off, but it can be remedied either by adding cold water to the bath where dilution is possible, or raising the goods above the surface for a few minutes till the bath has cooled down sufficiently.

With the second method, where the cotton should be dyed up to the shade first, there is one of three possibilities of changing the shade of the matched cotton during the time while the wool is matched. The temperature must be raised to the boil as this is the only way the wool can be dyed with the neutral dyeing acid dyes, and if the bath was not exhausted, and there is some cotton colors left in the bath, as usually is the case, the cotton may take up more color; if the bath was exhausted, or a portion was replaced with fresh water, there is danger of having the cotton stripped slightly, but enough to change its shade; the last danger is with the acid dyes going on the cotton, as most of them, though they do not dye the cotton, tint is enough to change the shade considerably, especially in dyeing greys, light blues and olives.

PRECAUTIONS IN DYEING UNION COODS.

a—The nature of the goods, e. g., the amount of wool and cotton it contains, as on this depends the amount of acid dyes to be added and also the time and temperature to be maintained during the dyeing operation.

b—The hardness of the water. The water should be softened by the addition of borax, soda ash or sodium phosphate. As a rule the presence of an alkali is beneficial with colors that dye both the cotton and wool, and an excess, such as half a pound of any of the above mentioned alkalies per 100 gallons of water will be found very useful. Larger amounts may weaken the wool fiber and large additions should be avoided.

c—Penetration. In order to obtain good penetration the goods should be perfectly scoured, and all traces of soap removed by washing.

The following scouring bath will be found very efficient for scouring union goods:

100 gals. Water.
2 lbs. Soda Ash.
2 lbs. Turkey Red Oil.
4 lbs. Soft Soap.

Work at 120° to 140° F. for 15 minutes to half an hour, depending on the amount of grease present.

d—Additions of Acids. A practice should not be made of adding acetic acid or any other acid to the dye bath in dyeing "Unions," as only in few cases the latter is beneficial. In the majority of cases the presence of acid not only prevents the dyestuff from going on the cotton, but also dulls the shade, and if any of the cotton reds are used it will change the color entirely.

e—Amount of Salt. Generally very little consideration is given to the amount of salt added to the dye bath in dyeing cotton or wool, as the only difference is a better or poorer exhaustion. With "Unions" the difference is more than that, and the amount of salt used with the same color will vary greatly the shade on either wool or cotton. For instance: 25 per cent. of Glauber salt

with 1/2 per cent. of Chrysophenine will give the cotton darker than the wool; 50 per cent. of salt with the same amount of color under the same conditions will dye both fibers alike; 75 per cent. of salt will make the wool considerably darker than the cotton. The same may be said about reds, browns, greens, etc., colors which are recommended as dyeing both fibers alike. Hence, to obtain the same results with a given recipe, especially with mixtures, the amount of salt should be the same in each case. As a rule all conditions of dyeing should be as near the same as possible, that is, dilution, time for boiling and cooling.

(To be continued.)

## IRON IN WATER.

*BY CHURCHILL HUNGERFORD.*

From the standpoint of the dyer and bleacher perhaps the most troublesome contamination that can possibly show itself in a water supply is that derived from iron. Many waters that would be otherwise eminently suitable for dyeing and bleaching are rendered unfit for such purposes by reason of even such small quantities of iron as one part per million. In certain special instances even a smaller quantity has been known to create serious trouble.

Iron may be derived from several sources and exist in water in several forms. If the water is drawn from deep wells it is likely to exist in the form of the bicarbonate. If a surface water, it may be derived from shallow springs or swamps, or from industrial wastes and may assume a number of different chemical combinations.

Its presence may be manifested by the deposition of iron oxide upon the goods, thereby causing stains and streaks upon them; it may act directly upon the dyes themselves, producing an entirely different color than that which is desired; or still further, it may support certain persistent growths of living organisms, closely allied to the bacteria and known as crenothrix, which possess the property of congregating in enormous quantities and absorbing the iron from the water to form an integral part of their own structures. These masses of organisms at times become detached in considerable quantities and as they are of a more or less gelatinous structure they attach themselves to the goods, and, when decomposed by the action of heat or chemicals, leave a heavy deposit of irou in their place.

This latter phase is one which has been a source of great mystery to many dyers and bleachers, for the reason that while they recognized that the spots and streaks upon the goods were due to iron, repeated analyses of the water showed that the iron content of the water itself was so small that it could not apparently have produced such results. Waters containing as low as one-quarter of one part per million, or about one-seventieth of a grain of iron to the gallon, have been known by the writer to produce results as bad as those obtained by using water containing three parts per million, for the simple reason that the water containing the higher amount of iron had none of the troublesome organisms, and consequently the iron was distributed uniformly over the goods and not concentrated in spots.

Another great source of trouble, particularly in bleaching, is due to the fact that the iron existing in the water is, when mixed with an excess of lime, a very powerful coagulant, and will precipitate upon the goods various organic matters of vegetable origin and produce stains of a very persistent nature that are very difficult to remove in the bleaching process.

In following the ordinary procedure of bleaching, the goods are first boiled with quick lime, after which they are run through the washing machine where they are intimately mixed with large volumes of water. The lime in the goods instantly precipitates all of the iron there is in the water and the iron in its turn precipitates much of the organic matter, all of which is held on the fabric, with the result that at certain stages of the bleaching process numerous stains, apparently of iron, appear upon the goods. These stains, however, do not respond to the ordinary test for iron and, in fact, it would be impossible for them to be com-

posed of iron for the reason that the sour would have dissolved any iron that might be in the goods. If, however, the goods were tested immediately after being washed out of the lime boil and before they had been soured, deposits of iron would have been found. The souring process, however, removes the iron, but leaves the organic matter, which is perhaps even worse than the iron and requires a great deal of care to remove from the goods. Instances are on record where less than one-half part per million of iron, with no iron organisms or crenothrix present in the water, have produced the above result from this cause.

Iron contamination from industrial wastes comes mainly from two sources, the coal mines and some of the iron industries, particularly that of wire drawing. In both cases the iron exists in the form of a sulphate. The degree of contamination in either of these cases may be very high, sometimes as high as thirty or forty parts per million being recorded. Such waters are so very badly contaminated that no one has ever even tried to apply them to their industry, so that there are no practical demonstrations of how much trouble this amount of iron could make.

If any deduction as to the amount of iron permissible in the water can be made from the above with safety it would be substantially as follows:

For deep well waters, the iron content should not exceed five-tenths of a part per million, and for surface waters not more than three-tenths of a part per million.

There have been many attempts made to remove iron from water. The favorite method is aeration followed by filtration. This may or may not be effective. Theoretically, the bicarbonate of iron on coming in contact with the oxygen of the atmosphere is converted into the insoluble oxide, or iron rust, but there are certain conditions which often interfere greatly with this oxidation process. It is seldom that a well water is met with in which over 75 per cent. of the iron can be oxidized by a reasonable period of aeration. Small proportions of organic matter in the water form certain indefinite compounds with the iron and cause it to resist the oxidizing influence of the atmosphere, with the result that the iron and the organic matter together pass through the filter. It is this same organic compound that accounts for the iron in solution in many surface waters, and were it not for this combination many streams which now contain iron in troublesome quantities would naturally purify themselves by the simple oxidizing effect of the air.

Charcoal filters have met with more or less success when new, but the charcoal soon loses whatever oxidizing property it may have originally possessed and simply becomes a granular filter which will remove the suspended particles of matter, but will have little effect upon the dissolved matter. In fact, occasions have been noted wherein the filtered water contained more iron than the unfiltered, the charcoal seeming to possess the property of storing iron for a time and then redissolving it and permitting it to pass back into the water.

There is, fortunately, a complete remedy for all iron problems. No matter what the form in which the iron appears it can be readily reduced below two-tenths of one part per million at a cost for chemicals of less than sixty cents per million gallons. All forms of iron that are soluble in water, either the bicarbonate or the sulphate, are instantly precipitated by this treatment and can be completely filtered out by the filter. The chemical used in quick-lime and the apparatus consists of a device for adding lime —in its chemical equivalent to the iron—to the water, and a specially constructed sand filter. This apparatus does not appreciably harden the water, but it does remove the iron to such a degree that it can never cause any trouble in any dyeing, bleaching or finishing process, nor does it exist in sufficient quantities to support a growth of crenothrix.

An interesting example of this device was installed about two years ago for the United States Government at Fort Hancock, Sandy Hook, N. J. The water supply at Fort Hancock is derived from two deep wells, one of which is 450 feet and the other

760 feet in depth. The water flows clear from the wells, but on standing a short time becomes very cloudy. An air lift is used to pump the water from the wells, the two together delivering about six hundred and fifty gallons per minute. The amount of iron in the water varies somewhat, but ranges from five to seven parts per million, which may be considered a fairly high degree of contamination.

When the wells were first put down it was found that the water could not be used about the fort for any purpose whatever. The Government engineers, observing that the iron was apparently very readily precipitated, built two large concrete reservoirs capable of holding about a week's supply of water. As the air lift thoroughly aerated the water they argued that it must consequently thoroughly oxidize the iron and that by giving several days for sedimentation this would all be precipitated. The plant was accordingly constructed. It failed to make the water from the wells suitable for any purpose beyond that of sprinkling the lawns, even though there was at least six days' sedimentation. It still retained its chalybeate taste and stained everything it touched a deep reddish brown. Upon analysis it was found that the water still contained over two parts per million of iron which had resisted the oxidizing effect of the air. Bids were then asked by the Government for an apparatus of the bidders' own design and guaranteed to be able of reducing the iron content of the water to less than three-tenths of a part per million at all times. Recognizing the value of calcium hydrate as an oxidizing agent, the Government selected the only apparatus presented which contemplated the use of lime and awarded the contract for a plant of 760,000 gallons daily capacity to Hungerford & Terry, Inc., of Philadelphia, Pa., for a plant of their design.

This purification plant consists of two distinct portions: First, an apparatus for reducing all of the dissolved iron to an insoluble form; and secondly an apparatus for removing this precipitated iron from the water.

It is necessary that lime should be applied in exactly the right proportions. If insufficient lime is applied complete precipitation is not obtained, and on the other hand, if too much lime is applied the water may be hardened. In this instance the precipitating apparatus consisted of a device known as a saturator for the manufacture of clear lime water upon a large scale and an apparatus for applying the lime water accurately to the raw water. Clear lime water contains about 78 grains to the gallon of quick lime in the form of the hydroxide. This solution being a saturated one contains, of course, always the same amount of lime, so that all that is necessary to obtain an exactly proportionate amount of lime to the amount of water applied is to apply the lime water in the same proportionate quantities. An automatic measuring device does this so exactly that the amount of lime can be regulated so that the error is less than 1/100 of a grain to the gallon. Fluctuations in the rate of discharge from the pumps do not make any difference in the proportionate amount of lime applied.

As soon as the lime is applied to the water, which is, as has been before stated, thoroughly aerated by the air lift, precipitation takes place and the clear water assumes a bluish turbid cast indicating that the iron is converted into the form of the hydroxide. This being a very unstable compound is rapidly converted into the sesquioxide or common iron rust, which substance being insoluble in the alkaline water is readily removed in the subsequent filtration process.

The reservoirs previously installed are now utilized as sedimentation and reaction basins. They are not necessary parts of the apparatus, but having been installed are now utilized. After the water has been treated with lime and has passed through the basins a portion of the iron has settled out and the water is pumped through the filters to the standpipe supplying the post.

The filters are enclosed in heavy steel cases tested to one hundred and fifty pounds pressure, and the filter beds proper consist of specially prepared sand. The filters are so constructed that the tendency of the iron

to form concretions around the sand grains is entirely done away with. They remove all traces of the iron and at intervals of about four days are washed by reversing the flow through them. It takes about five minutes to wash each filter or ten minutes to wash two filters, and at the end of the washing period the filter bed is entirely freed from iron, and they are again ready to run for another period of four days.

The washing of the filters is a somewhat interesting process. They are so constructed that the wash water is applied uniformly underneath every portion of the filter bed, and the upward rush of water raises the sand about four inches so that it assumes the condition of a bed of quick sand. This is due to the fact that the sand grains are really afloat in the water, and are dancing up and down passing and repassing each other with such rapidity that all of the iron oxide is rubbed off from them. So vigorous is this washing process that an especially hard sand has to be used, as otherwise the sand grains themselves would become worn out in the course of time and be washed out of the filter. As it is, the loss of sand is about one inch yearly, but as there is never any necessity of renewing the filter bed by reason of its becoming foul, this loss is only a trifling matter.

The following analyses made in the office of the Surgeon General indicate the efficiency of the apparatus:

I have the honor to report that I have made the examinations of the two samples of water sent to this office through the Quartermaster General, U. S. A., by Capt. M. N. Falls, U. S. A. Constructing Quartermaster, Ft. Hancock, N. J., for that purpose, and beg to present the results as follows:

The first is the water as it comes from the wells. It is a turbid water of a very faintly alkaline reaction, odorless, of a yellowish color, due to the marked amount of suspended ferruginous matter.

The second is the water after treatment through the filtration apparatus. It is absolutely clear and colorless, is faintly alkaline in reaction, contains an almost inappreciable sediment on standing many hours, and is without odor. There is no visible charring or carbonization in the residue on its incineration. There thus appears a great improvement in the water by the removal of what small amount of organic matter it contained, together with practically all of the iron, and at the same time the amount of the mineral matter was diminished in its total by one part per million. The actual amount of iron present in this sample is 0.140 part per 1,000,000 while its hardness (Clark's) is 4.52 per 100,000.

Edwin R. Hodge,
Chemist, in charge.

A second sample using more lime in the purifying process was sent on to Washington after the first one as above reported. Following is the Government chemist's report:

I have the honor to report that I have made the examination of the second sample of water received at this office on the second instant from the Constructing Quartermaster, U. S. Army, Fort Hancock, N. J., through the Quartermaster General, U. S. A., with a view of determining the amount of iron therein, and its conformity to the specifications for its purification by the newly installed filtration plant at that Post. The figures are as follows:

Contained iron 0.088 parts per 1,000,000 parts.

Total solids. Treated water 49.50; raw water, 82.50 per million parts.

Edwin R. Hodge,
Chemist, in charge.

In view of the above reports, it seems as if the satisfactory treatment of iron waters has been accomplished.

## Sponging Wool Goods.

*Editor Textile World Record:*

We are shrinking some of our cloths by running them through a tank of cold water and after allowing them to lie on rollers for a time, hanging them on racks. Can you furnish us with a test whereby we can by testing a swatch be able to tell whether the colors will run in the piece?

Finisher (1187).

We would be pleased to hear from any of our readers who can give information regarding this matter.

During March, 1910, there were twelve lace looms shipped from Plauen, Germany, to the United States, valued at $19,290, and during the same month in 1909 there were two shipped, valued at $3,194.

There are at present about 7,000,000 spindles in France, compared with 5,500,000 in 1900, an increase of 27 per cent. in the nine years. The consumption of cotton during this period increased from 700,000 bales to 970,000 bales, or 39 per cent.

## MODERN DYEING CONDITIONS.

*B. J. DOBROYD.*

(From the Dyer and Calico Printer.)

(Continued from June.)

Both simply give what they can for the money, and the price is cut down to such a low figure that the dyer cannot give much indigo. The fact of having a slight indigo bottom is supposed to entitle the goods to an indigo label. Some of these blues are no faster to light than a common blue, while they are much more difficult to dye level, and cause the dyers no end of trouble.

The ancient nitric acid spot test is still in use by many people who ought to know better. As a distinguishing test between indigo and logwood the reaction is quite satisfactory, but it should be remembered that when the test was brought out none of the many coal tar blues were discovered, a good number of which yield a spot resembling indigo.

In view of the red coloration which logwood gives with acids, it cannot be used for filling cheap indigos, so its place has to be taken by one or other of the artificial blues, which differ so much in point of fastness to light. Sulphon cyanine gives a good dark navy shade, being at the same time fairly fast to light, but the shade is dull and deficient in bloom, and it is by no means an easily leveled color. Not a few of the so-called fast blues consist of three or more separate dyes mechanically mixed. Such mixtures are not to be recommended, as the rates of solubility are almost invariably different, with an increased danger of flecked or stained pieces. Fortunately mechanical combinations of dyes may, as a rule, be readily detected; the best and simplest method being to dust a little of the dye on to concentrated sulphuric acid. When this is done each particle of different dye gives its own color, and the result is plain under a small pocket-lens.

The stripping test by boiling in sulphuric is in favor with some for showing the depth of the indigo bottom; the sample of dyed cloth is boiled for 10 to 20 minutes in a 10 per cent. solution of sulphuric acid, and the remaining color adhering to the fabric is assumed to be indigo. The test is not a good one, as some tar blues are only partially stripped and others only slightly. Logwood, of course, is removed, but even this is not got down beyond a pale reddish claret, which goes to increase the depth of the indigo. To prove efficient, a stripping test should consist of boiling in separate baths of alkali, acid, and alcohol, with a rinse of distilled water between each.

Formerly the star test was in common use to show the amount of indigo possessed by woaded blacks. It was carried out by tieing up a small pocket in the cloth after vatting; if this was done tightly the string prevented the entrance of the dye liquor, and on cutting the string after dyeing, a blue ring was left showing the amount of bottom. Unfortunately, this test was only reliable when performed by conscientious men, it being so easy for others who were less scrupulous to give the star end an extra dip or two in the blue vat. The same means could be used now to show the amount of indigo on cheap indigos, but the same deception would doubtless be carried on, making the test of no value.

All cloths for vat dyeing must be thoroughly soap scoured previously, and the importance of this to the dyer cannot be overestimated. Not only must the scouring be thorough, but the dyer should have this operation under his immediate supervision so as to obviate all risks of carelessness. The mere fact of scouring until all grease and dirt is out, is not in its way sufficient; besides the impurities, the dyer should assure himself that every particle of the soap is also cleared away; otherwise even dyeing is impossible.

The work of removing the last traces of soap is by no means so simple as it sounds, while if hard water is used the difficulty is increased, as white insoluble lime soaps are formed. Very small traces of these objectionable bodies are sufficient to cover the wool fibers with a thin film, and, being white, they are not visible to the eye. After dyeing, however, large cloudy places are often seen, and the leveling up of these is no easy matter, indigos being proverbially "bad to cobble."

Pure indigos are much more liable to

crock than the imitation; the deep shades exhibit it worst of all. It may be safely allowed that pure dyeings of vat indigo cannot be got so absolutely clean that they will not mark a white handkerchief when rubbed dry, but still, the fault of rubbing should not be so pronounced as it frequently is. Many indigo cleansers are on the market, a favorite one being a mixture of myrobalan extract with soda ash. Still, if crocking is very pronounced, it shows a waste of dyeware and possibly a jaded or partially oxidized condition of the vat. Soap or greasy matter in the cloth is also extremely liable to cause rubbing, although this factor will most probably make itself evident by unevenness of color.

Hawking machines have to a large extent replaced the hand hawking of cloth in the vat, the general construction of the machine consisting of a couple of squeezing rollers the full width of the piece, together with a lattice scray and guide rollers. The whole is lowered bodily into the vat, and the cloth kept a few inches under the surface, the rollers imparting the drawing motion as well as squeezing. This does away largely with the stains and wind blobs common to the old-fashioned style of hand hawking, while it also agitates the vat much less and prevents loss of indigo by oxidation.

Extracts of logwood, known as hematine, have been much improved in quality and composition during the last few years. Formerly all the extracts were in the form of pastes with the coloring matter in many stages of oxidation, so that it was a common thing to find big differences between the behavior of various lots. Changing the extracts from the paste form to that of solid crystals was a great improvement both in case of transport as well as purity of coloring matter, while the concentration in strength was nearly doubled. Many of the old pastes appeared to contain a large percentage of matter which was not haematein and apart from a few which had been adulterated by the addition of glucose, the others contained tannin matters and cellulose. The exhaustive extraction to which the wood was subjected could hardly help bringing out other soluble substances besides the color, and these could be noticed as forming a dense clay colored layer at the bottom of the cask.

It is common knowledge that the coloring principle of logwood is the colorless body haematoxylin, a glucoside which is split by oxidation into grape sugar and haematein. This conversion takes place during the maturing of the wood after cutting, and the fermentation which induces it is brought about by watering the beds of wood and allowing them to heat up to a certain point. New cut wood is yellowish and gradually changes to a deep crimson brown as it matures. The process may be hastened by a dose of very weak alkali or old wash, but at all times this is dangerous work and particularly so in hot weather. Completely matured wood must be kept in a cool dry place, otherwise there is great risk of the fermentation going further when the wood will turn brown and lose all coloring properties.

Of the respective merits of chipped or rasped logwood and extracts there is much to be said. For fine serges and for wool and slubbing, hematine is superior to wood as there are no chips or splinters to get into the fibers; it also answers well for full blacks and for cotton goods, but some makes impart a reddish tinge to the dye which is an unpleasant feature.

For brightness of shade and general bloom, the consensus of opinion appears to be in favor of wood, and it is very probable that this is so on account of the comparative short time and low temperature at which the wood is extracted in the dye bath. It is very evident that in an ordinary dye-vessel, logwood is never thoroughly exhausted of coloring matter, and by this method of extract making, there is less chance for resins and tannin matters to be brought into the liquor with a bigger chance of purity of shade. It is still an open question whether for certain shades it is not advisable to use logwood which has not matured to the full, especially with some mordants. In a case of this kind, the mordant would complete the oxidation of the color on the fiber itself. Concerning the fugitive nature of logwood towards light,

much has been said against it, and with quite sufficient reason where light shades are in question. But very dark blues and blacks may be dyed with it which will last quite as long as the fabric on which it is dyed, and no reasonable man expects to get more than twelve months' everyday wear out of modern cloth.

It has long been the custom to dye the cotton of unions in an ordinary washing machine in a cold liquor (burl dyeing), but only recently has it been found practicable to dye the white warp of a union during the milling of the goods. This, however, can be satisfactorily done with Pluto Black 5 B S extra, the color being dissolved in water and thoroughly mixed with the soap. As small a quantity of boiling water as will answer should be used for dissolving the dye, otherwise the milling will be interfered with. After milling in the usual manner, the cloth should be allowed to lie in the soap for about two hours to enable the color to penetrate thoroughly, after which it should be well washed, squeezed, and the woolen filled up with acid colors.

(To be continued.)

# *Dye Recipes*

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

Recipe No. 97.

## Yellow on Silk Noils.

Azo Flavine 2 R on 100 lbs. silk noils. Prepare the dye bath with

3 lbs. Azo Flavine 2 R.
(Badische Co., 128 Duane St., N. Y.)

Enter at 140° F., bring to 170° F., and then add

5 lbs. Acetic Acid.

Bring the bath to the boil several times, allowing it to cool a little between each boil. Finally add about

½ lb. Sulphuric Acid,

to exhaust the color.

Azo Flavine 2 R satisfies the demand for a silk dyeing yellow which is perfectly free from nitrous acid.

Recipe No. 98.

## Blue on Cotton Yarn.

Brilliant Congo Blue B F L on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Brilliant Congo Blue B F L.
(Berlin Aniline Works, 213 Water St., N. Y.)
40 lbs. Glauber's Salt.
2 lbs. Soda Ash.

Dye for one hour at a temperature just below the boil.

Brilliant Congo Blue B F L possesses fastness to light and weather somewhat better than the ordinary substantive blues, and its fastness in other respects is equal to or better than other direct cotton colors.

Recipe No. 99.

## Red on Cotton Yarn.

Chlorazol Fast Bordeaux B on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Chlorazol Fast Bordeaux B.
(Read Holliday & Sons, 11 Gold St., N. Y.)
3 lbs. Soda Ash.
20 lbs. Common Salt.

It is dyed in the ordinary way of direct colors.

Chlorozol Fast Bordeaux B possesses superior fastness to light, washing and acid. It gives best results in an alkali bath, so that it is best dyed with its own weight of soda ash along with Glauber or common salts, or sulphade of soda, unless the alkali bath is objected to as in garment dyeing.

Recipe No. 100.

## Brown on Cotton Yarn.

Helindone Brown G paste on 100 lbs. cotton yarn. Prepare the dye bath with

20 lbs. Helindone Brown G paste.
(H. A. Metz & Co., 122 Hudson St., N. Y.)
4 lbs. Caustic Soda, 40° Be.
6 lbs. Hydrosulphite M. L. B. (powder conc.).

The latter being gradually stirred in and the mixture heated to 135° F.

Stir well, allow to stand and at the end of 30 minutes, reduction should be complete, and bath ready to use.

The yarn is dyed at a temperature of 130° F. for 30 minutes, and the shade then developed and brightened by soaping for 30 minutes in a boiling bath containing 2 parts of soap per 1,000 of water.

Helindone Brown G paste is the first brown dyestuff of the Helindone group which yields dyeings of fastness of the others.

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Recipe No. 101.

**Grey on Worsted Yarn.**

Fast Chrome Grey B Conc. on 100 lbs. worsted yarn. Prepare the dye bath with

¼ lb. Fast Chrome Grey B Conc.
(C. Bischoff & Co., 451 Washington St., N. Y.)
5 lbs. Acetic Acid.

Enter at 120° F., dye at a boil for one hour, then add

1 lb. Potassium Bichromate,

and continue the boiling one hour longer.

Fast Chrome Grey B Conc. possesses excellent fastness to sunlight, even in light shades.

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Recipe No. 102.

**Black on Cotton Yarn.**

Developed Black 6673 on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Developed Black 6673.
(Innis, Speiden & Co., 46 Cliff St., N. Y.)
20 lbs. Common Salt.

Enter yarn lukewarm, bring bath to a boil and dye at a boil for one hour. Then rinse and diazotize by working for 15 minutes in a cold bath made up with

3 lbs. Sodium Nitrite.
10 lbs. Hydrochloric Acid.

Rinse again in cold water and then develop by working 15 minutes in a cold bath made up with

2 lbs. Metatoluylene Diamine.
1 lb. Soda Ash,

then lift and wash thoroughly.

Developed Black 6673 is especially adapted for hosiery work, and as a bottom for aniline blacks.

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Recipe No. 103.

**Green on Worsted Yarn.**

Anthranol Green B on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Anthranol Green B.
(F. E. Atteaux & Co., 176 Purchase St., Boston, Mass.)

Enter yarn at 140° F., bring to a boil and dye at a boil for one hour. Then add

4 lbs. Magnesium Sulphate (Epsom Salts),

and continue the boiling 30 minutes longer.

Anthranol Green B is very fast to light, fulling, cross dyeing and steaming. In the dyeing of light shades the anthranol colors require no addition whatever, for medium shades only magnesium sulphate, and for heavy shades only acetic acid or bisulphate of soda.

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Recipe No. 104.

**Violet on Cotton Yarn.**

Immedial Violet C R on 100 lbs. cotton yarn. Prepare the dye bath with

7½ lbs. Immedial Violet C R.
(Cassella Color Co., 182 Front St., N. Y.)
15 lbs. Sodium Sulphide (Crystals).
4 lbs. Soda Ash.
50 lbs. Common Salt.

Dye at a temperature just below the boil for one hour.

Immedial Violet C R gives a bright violet which possesses good fastness.

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Recipe No. 105.

**Blue on Union Cloth.**

Naphtamine Union Blue B J on 100 lbs. cotton and worsted union cloth. Prepare the dye bath with

5 lbs. Naphtamine Union Blue B J.
(Kalle & Co., 530 Canal St., N. Y.)
20 lbs. Common Salt.
2 lbs. Puropol.
200 gals. Water.

Enter material at ordinary temperatures, bring bath to a boil in 30 minutes, boil 20 minutes, then shut off steam and run for 20 minutes in the gradually cooling bath.

Naptamine Union Blue B J possesses good fastness to light, washing, fulling and hot pressing.

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Recipe No. 106.

**Blue on Cotton Yarn.**

Diazo Sky Blue B on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Diazo Sky Blue B.
(Farbenfabriken of Elberfeld Co., 66 Lafayette St., N. Y.)
20 lbs. Common Salt.
2 lbs. Soda Ash.

Dye at a boil for one hour, then diazotize in a bath made up with

2½ lbs. Sodium Nitrite.
7½ lbs. Hydrochloric Acid, 32° Tw.

Work cold for 20 minutes, then develop in a bath made up with

1½ lbs. Developer A.

Work in this bath at ordinary temperature for 20 minutes. Wash and dry.

Diazo Sky Blue B possesses very good fastness to washing, and its fastness to light is increased somewhat by the developing process.

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Recipe No. 107.

**Scarlet on Cotton Yarn.**

Diamine Fast Scarlet G F F on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Diamine Fast Scarlet G F F. (Cassella Color Co., 182 Front St., N. Y.)
20 lbs. Glauber's Salt.
1 lb. Soda Ash.

Enter at 180° F., and dye at a boil for one hour.

Diamine Fast Scarlet G F F is distinguished by its brightness and property of exhausting well from the dye bath.

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Recipe No. 108.

**Blue on Cotton Yarn.**

Diazo Navy Blue B on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Diazo Navy Blue B. (Geisenheimer & Co., 189 Front St., N. Y.)
5 lbs. Soda Ash.

Enter at 180° F., and dye at a boil for one hour.

Then rinse and work for 20 minutes in a cold bath made up with

2.5 lbs. Sodium Nitrite.
7.5 lbs. Hydrochloric Acid, 32° Tw.,

and then develop for twenty minutes in a cold bath made up with

1 lb. Beta Naphthol,

dissolved in a small amount of caustic soda solution, and added to the necessary amount of water.

Diazo Navy Blue B when diazotized and developed possesses very good fastness to washing and does not bleed.

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Recipe No. 109.

**Orange on Worsted Yarn.**

Mercerol Orange Y on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Mercerol Orange Y. (Read Holliday & Sons Co., 11 Gold St., N. Y.)
10 lbs. Glauber's Salt.
3 lbs. Acetic Acid.

The color is first dissolved in lukewarm water, the material entered and the bath raised to a boil for 1/2 hour. The steam is then shut off and 1/2 to 2 per cent. of sulphuric acid diluted with water is added, and the dyeing continued for a further 1/2 hour at a gentle boil.

Mercerol Orange Y has excellent leveling properties so that it gives solid shades on the worst wools and yarns. It also combines remarkable fastness to light and milling and its simplicity of application should be a strong feature.

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Recipe No. 110.

**Green on Cotton Yarn.**

Oxamine Pure Green G on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Oxamine Pure Green G. (Badische Co., 128 Duane St., N. Y.)
15 lbs. Common Salt.

Enter at 180° F. and dye at a boil for one hour.

Oxamine Pure Green G gives a bright green, possessing the characteristic properties of the direct cotton colors.

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Recipe No. 111.

**Brown on Worsted Yarn.**

Acid Seal Brown on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Acid Seal Brown. (American Dyewood Co., 84 William St., N. Y.)
20 lbs. Glauber's Salt.
3 lbs. Acetic Acid.

Enter at 160° F., and dye at a boil for one hour.

Acid Seal Brown withstands a light milling, and will be found valuable for producing fashionable shades on worsted yarn.

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Recipe No. 112.

**Yellow on Worsted Yarn.**

Anthranol Yellow on 100 lbs. worsted yarn. Prepare the dye bath with

1½ lbs. Anthranol Yellow. (F. E. Atteaux & Co., 176 Purchase St., Boston, Mass.)

Enter yarn at 140° F., bring to a boil and dye at a boiling temperature for one hour. Then add

4 lbs. Magnesium Sulphate (Epsom Salts).

and continue the boiling thirty minutes longer.

Anthranol Yellow is very fast to light, cross dyeing, fulling and steaming. In the dyeing of light shades the Anthranol colors require no addition whatever, for medium shades only an addition of magnesium sulphate, and for heavy shades only acetic acid or bisulphate of soda.

# *New Machinery and Processes*

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to the textile manufacturers. It is not a list of patents but of improvements on the market, the idea being to present to our readers a systematic monthly record of new machinery, etc., of interest to textile mill men.

Whenever possible we endeavor to make a personal investigation of the new machinery and processes described in this department. In the absence of such personal investigation we must necessarily rely upon information obtained from those who control the machines and processes.

We invite machine builders and others to send us such information for this department.

**Split Pulley.** The Reger One Piece Split Pulley Mfg. Co., 1932 E. Westmoreland St., Philadelphia, Pa. A split pulley manufactured in one piece. A description will be found in this issue.

**Tentering Machine Drive.** W. A. Church, 1907 Cropsey Ave., Brooklyn, N. Y., is about to place on the market an improvement in driving tentering machines for which he received a patent some time ago. The object is to avoid any vibration, causing strain on the fabric, machine or floor and to give even tension. It also provides machines for varying the degree and direction of tension swing or jig, so an indefinite number of adjustments or shifts can be made. His improvements also provide means for imparting varying directions of stretch, either straight or diagonal, to the fabric operated upon, thereby obviating the necessity of having different machines for different textures of fabric. We understand that these improvements can be adjusted to all makes of machines.

**Warp Splitting Machine.** Jacob K. Altemus, 2824 North Fourth St., Philadelphia, has recently developed and placed on the market a machine for splitting warps and piling them on the floor so that they will not fall over. One objection to machines for this class of work built on old models has been the slowness in operation, and this is a feature to which Mr. Altemus has given particular attention, as his new machine is practical and extremely simple for operating and accomplishing results.

These machines are being installed in places where they require warps to be converted for various purposes and uses.

This is a general line of machinery to which Mr. Altemus has given special attention, his warpers, winders and spoolers having been especially designed to meet the requirements in saving cost of operation, power, floor space and waste.

**Self Lubricating Collar.** The Machinery Components Co., Ltd., Manchester, England. A self lubricating long collar for slubbing, intermediate and roving frames. It is made from drawn weldless steel tubing with a shell not over 1/32 of an inch thick. Inside the collar is a cast iron bushing, the spindle working against cast iron as heretofore. The oil is supplied through a hole at the side and is absorbed by a ring of felt which then supplies the oil to the spindle for a long period without replenishing.

**Selvage Motion.** Greszard & Co., Hilden, Germany. An attachment for weaving a tight edge on narrow fabrics of which a number of lengths are woven together with one set of shuttles.

**Transporting Lattice.** R. W. Buckley, Wainworth St., Rochdale, Eng. An improved lattice for transporting materials frome one department of the mill to another. It is built of sheet metal supported on chain links.

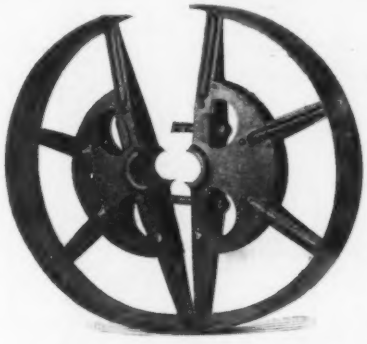
**Loom Take-Up Motion.** Henry Livesey, Blackburn, Eng. A loom take-up motion designed to prevent thick and thin places when resetting the warp after a pick-out.

**Fulling Mill.** L. P. Hemmer, Aachen, Ger. An improved fulling machine for which a large production with reduced liability of damage to the goods is claimed.

**Jacquard Loom.** Oscar Schleicher, Greiz, Germany. An improved jacquard loom which is also adapted for a dobby motion.

## THE REGER ONE PIECE SPLIT PULLEY.

This new, patented one-piece split pulley is made by the Reger Manufacturing Company of 1932 East Westmoreland St., Philadelphia, Pa. The special feature is that it is built in one piece, making it light in weight, and easy to adjust, with little effort and at a moment's notice, to any part of a shaft without interfering with any other pulley which



THE ONE PIECE SPLIT SPOKE PULLEY.

the shaft may contain. It holds its adjustment until removed, when it can be taken from the shaft as easily as it was applied. Strength and extreme simplicity of construction ensure durability, which combined with its inexpensiveness makes it worthy of attention.

These pulleys are supplied in two forms known as the "one piece split web pulley,"

ONE PIECE SPLIT WEB PULLEY.

built in from 6 to 20 inches in diameter, for use where small pulleys are desired, and the "one piece split spoke pulley" in the larger sizes. They are made from 6 to 16 inches in diameter, 3 to 6 inches crown, or straight face, or made with solid web; and from 18 to 24 inches, 3 to 6 inches crown, or straight face, with spokes extending from a central web. Spoke pulleys are also made by the company from 24 to 60 inches in diameter and wider crown or straight face as desired and pulleys of special dimensions will be made providing same are ordered in sufficient quantities.

## THE GLIDE-PROOF PULLEY COVERING.

Probably in no manufacturing industry is a uniform speed of the machinery more important than in textile manufacturing, and particularly in the running of looms. It is this fact that makes the glide-proof pulley manufactured by the National Glide-Proof Co., 115 Broadway, New York, of so much interest to the textile trade. The manufacturers of glide-proof state that it adheres perfectly to iron, steel, wood or paper pulleys, and prevents slipping of the belt. This enables the belting to be run slack, greatly increasing the life of the belts and reducing the friction and wear in the bearings. It is further claimed that belts running on pulleys covered with glide-proof require no adhesive grease or resin to prevent slipping. This prevents the loss of power by reason of belts sticking to the pulley.

The National Glide-Proof Co. have found in making a test of this belt covering that a planing machine revolving 2,728 times a minute showed a gain of 142 revolutions, bringing the speed up to 8,520 revolutions per hour after the pulleys were covered with glide-proof. In a power house two dynamos indicated 65 to 70 amperes before glide-proof was applied to the pulleys and 85 amperes after the application. Another dynamo showed an increase of from 640 to 700 amperes as a result of applying glide-proof to the pulleys.

In applying this covering the pulley should be thoroughly cleaned and then glide-proof applied with a brush to the thickness of 1/6 to 1/8 of an inch.

Further information can be obtained from the manufacturers.

The raw silk imported into the United States during 1908 amounted in value to about $61,750,000, of which $38,880,000 worth came from Japan, $7,776,000 from China and nearly $12,636,000 from Italy.

## CLOTH CUTTING IN UNDERWEAR MILLS

The illustration shows a Ballard electric cutter in operation in the cutting room of one of the largest underwear mills in Pennsylvania. This picture was obtained by Mr. Maimin, through the courtesy of the mill where the machine was installed, and has been copyrighted by him. It shows clearly the manner in which the machine operates. The mill employed in this department alone 30 operatives and after the installation of one Ballard cutter was enabled to do the same amount of work by reducing the number of hands two-thirds, using them in other parts of the mill where more help was needed. It will be noticed that this method of cutting requires considerably less space and less labor than the old methods of cutting by hand or with a round knife. A highly important feature is that it cannot damage the fabric by throwing oil, the machine being so constructed, and so little lu-

THE BALLARD CUTTER IN OPERATION ON KNITTED UNDERWEAR.

Copyright 1910, H. Maimin.

bricant being used, that it is claimed to be impossible for it to throw the lubricant. The machine when in use is free from vibration, which makes it light and accurate in handling. This is a good point. The illustration shows how perfectly the goods are cut in the lay six inches high, the garment being correct, every cut being perfect and the top and bottom exact.

H. Maimin, the sole agent for the sale of this machine, has offices in the Bourse, Philadelphia.

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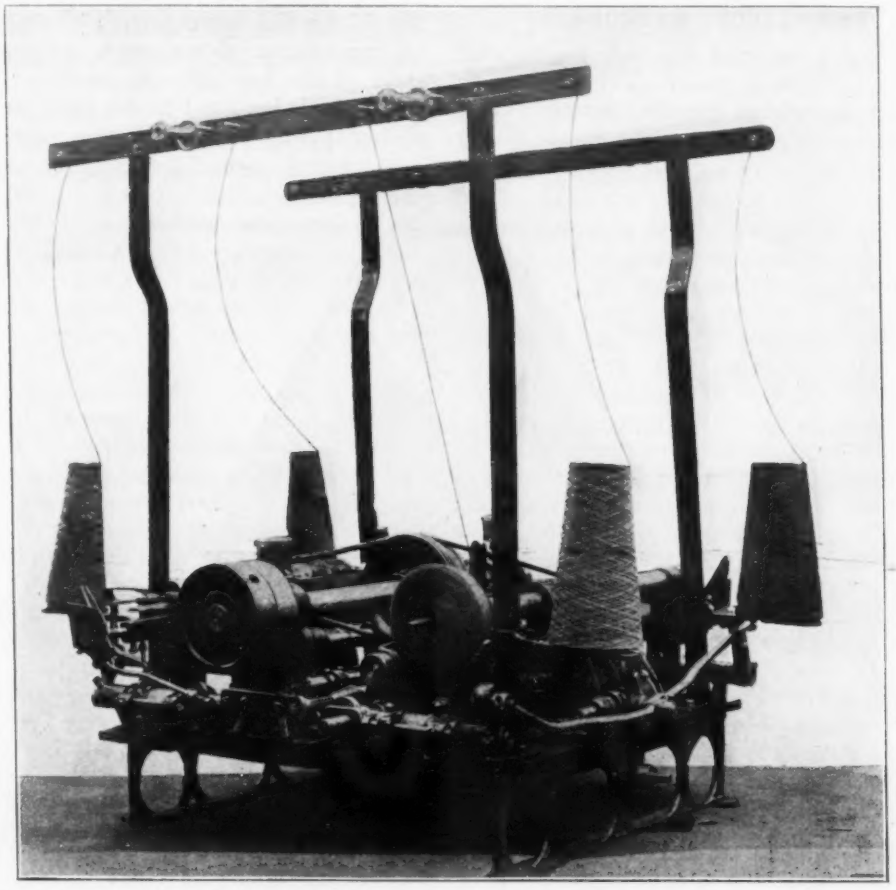
In 1907 the United States sold for export 8,721,303 bales of cotton valued at about $468,581,700.

## A NOVEL WINDING MACHINE.

The illustration shows a new winding machine for silk thread, sewing thread, cottons, etc., which is the invention of Emil Walder and others. A feature of this machine is that the package is built upon its own fabric. It is claimed to handle the finest cotton, silk or linen yarn.



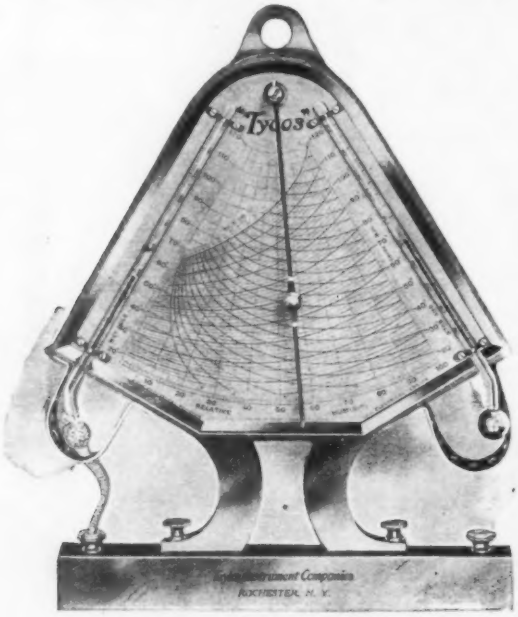
A NEW WINDING MACHINE.

Another feature claimed for the machine is that the actual yardage is indicated and assured by an automatic attachment, so that any length from thirty yards upwards can be obtained. In winding sewing silk, embroidery silk, sewing cotton for shuttles, both for domestic and manufacturing pur-

poses, this feature is important. With this method of winding no spool is required, thus eliminating the expense and reducing the space and weight required in shipping. Patents have recently been granted for the machine, which has been developed by practical men in Philadelphia mills.

## THE "TYCOS" HYGRODEIK.

This is a wet and dry bulb hygrometer, having a swinging pointer which indicates on a chart the relative humidity (or percentage of saturation), the absolute humidity (or weight of water in grains per cubic foot held in suspension), and the dew point. This instrument, which is manufactured by the Taylor Instrument Companies, Rochester, N. Y., is shown in the accompanying illustration.




THE "TYCOS" HYGRODEIK.

The chart is arranged for use between temperatures of 20° and 120° F. The hygrometric conditions are determined easily by the aid of the Hygrodeik, without computation or reference to tables. The general interest taken at present in the question of humidity in textile mills, the legal requirements prescribed by the laws of a number of our States, and the advantages in mill work from the close regulation of the humidity of the air in work rooms, make the Hygrodeik of great value to every textile manufacturer.

In using this instrument the index hand is swung to the left of the chart, the sliding pointer is adjusted to that degree line upon the chart which corresponds with the degree of temperature shown upon the engraved stem of the wet bulb thermometer. Then swing the index hand to the right, until the sliding pointer intersects the curved line which extends downward to the left from the degree line upon the chart corresponding with the indicated temperature of the dry bulb thermometer.

At this intersection the indicator hand will point to the relative humidity on the scale at the bottom of the chart. Should the temperature indicated by the wet bulb be 72° and that of the dry bulb 86° the index hand will indicate relative humidity 48 per cent. when the pointer rests on the intersecting lines of 72° and 86°. Observe the intersection, as above, and follow the curved line,

passing through it, which runs from the top downward to the right, to the point of contact with the dry bulb scale. The degree (65°) at this point on the scale is the dew point. The figure at the upper end of this line gives the absolute amount of water in grains, 6.8 grains, per cubic foot of air.

The wet and dry bulb thermometer, recognized as the most accurate and satisfactory of the many forms of hygrometers in use, has never had the popularity it deserves owing to the necessity of reference to complicated tables in determining the relative humidity and dew point corresponding to differences in degrees between the wet and dry bulb thermometers at different temperatures. Its action is based upon the principle that evaporation cannot take place without loss of heat, the greater the evaporation the lower the temperature.

The dry bulb thermometer is exposed to the temperature of the surrounding atmosphere: the wet bulb thermometer has a wicking of silk or cotton attached which ends in a cistern of water and keeps the bulb of the thermometer constantly moist, from the surface of which evaporation takes place, proportioned in degree to the dryness of the air.

The loss of heat occasioned by the evaporation of water results in lowering the reading of the wet bulb thermometer as compared with the air, or dry bulb thermometer, varying in extent with the temperature of the air and the amount of moisture it contains. The dryer the air and higher the temperature the greater will be the difference between the two thermometers.

From this difference in wet and dry bulb thermometer readings at different temperatures of the air, tables have been prepared by calculation and experimentation, to determine the relation of such differences to the volume of moisture contained in the atmosphere. The amount of moisture which can exist as vapor in the atmosphere depends entirely upon the temperature. The higher the temperature of the air, the greater the volume of moisture it will carry without condensation, and the lower the temperature, the smaller the volume of moisture the air will contain.

This varying relation of moisture to temperature (relative humidity) at different temperatures, precludes the possibility of using a universal factor for determining relative humidity.

When the air contains all the moisture it will hold in suspension there will be no evaporation at the wet bulb, and both the wet and dry bulb thermometers will read alike. One hundred per cent. of saturation exists and the air is said to be at "the dew point."

This varying relation of volume of moisture which the air can sustain at different temperatures is best expressed by an example: at 32° F. the air will hold in suspension 2 grains of water per cubic foot, while at 68° F. it will hold in suspension 7 1/2 grains. The air then, at 32°, carrying 2 grains of water is at the dew point, while at 68° it requires 7 1/2 grains to reach the dew point. Relative humidity, therefore, depends upon the relation of the temperature of the air to the volume of moisture the air contains at that temperature, rather than upon the amount of moisture in itself.

Should the temperature of the air be 68° and carry the same volume of moisture as would completely saturate the atmosphere at 32°, the percentage of saturation at that temperature would be somewhat less than 30. The definition, therefore, of "relative humidity" is percentage of moisture contained in the air at a given temperature as compared with the total volume of moisture which the air will sustain at the same temperature.

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The exports of raw cotton from the United States in 1909 amounted to 4,447,985,000 pounds valued at $419,733,103 compared with 3,816,998,500 pounds valued at $437,788,202 in 1908.

During 1909 Canada imported carpets valued at $1,610,965, mattings at $99,289, and oilcloth at $908,776, a total of $2,619,030. The United States contributed $20,739 of carpets, $6,397 mattings, and $182,720 oilcloth, a total of $209,856.

## A VAPOR DISPOSAL AND VENTILATING SYSTEM.

The prevention of fog and condensation in the new dye house of the Bigelow Carpet Co., at Lowell, Mass., has been a matter of prime importance in the design of this plant. Chas. T. Main, of Boston, the designing engineer, has developed a very interesting system for the combined disposal of dye house vapors and for ventilation.

The dye house is 285 by 46 feet, three stories on one side of the building and two stories on the other. The dye room proper, in which are located the dye tubs and washers, occupies the entire first story, with the exception of five bays at one end, which are separated by a partition. The second floor girders are supported by two rows of 7-inch C. I. columns placed 4 inches apart. Each pair of columns supports two 6-inch channels on which the steam mains, one for exhaust and one for live steam, are carried the full length of the dye room. The second floor is reinforced concrete 5 1/2 inches thick, supported on girders made up of two 15-inch, 33-pound channels cased in concrete.

Extending 3 1/2 inches below the ceiling line and located 14 inches from both side walls, a 6-inch, 8-pound channel runs the entire length of the building. In the concrete ceiling cast iron inserts, threaded to take a 3/8-inch rod, are placed on 5-inch centers each way from the center line of the building and 3 feet, 8 inches on centers longitudinally. Inserts are also placed on either side of each cross girder, 7 inches from its center line and 14 feet from the center of the building.

Into these inserts are screwed 3/8 rods, from which is supported a false ceiling made up of 1 1/4 by 4-inch H. P. cleats covered with 1/4-inch asbestos slate. On either side of the building this false ceiling is connected to the longitudinal channels and pitches towards the center to a point 33 1/2 inches below the true ceiling. An opening 2 inches wide is left down the center and 2 inches below this is suspended a deflector 40 inches wide extending the full length of the dye room. At each pilaster on both sides of the dye room is a vent flue 18 inches by 2 feet, 6 inches, extending to the roof, the outlet protected by a cap.

These vents are made up of 1 1/2 by 1 1/2 by 1/4-inch angles covered with wire cloth and 1 inch of Portland cement plaster and lined with 1/4-inch asbestos slate. In each vent is a wooden damper hinged at the wall and swinging down to open.

Just outside of either end of the dye room is located a multivane fan of the squirrel cage type, manufactured by the Massachusetts Fan Co., of Watertown, Mass., with wheel 4 feet, 6 inches in diameter, which when running at 300 r. p. m., will deliver 35,000 cubic feet of free air per minute. The fans are each driven by a vertical 7 by 8-inch enclosed, self-oiling, center crank engine, which will drive the fans at 300 r. p. m. with 90 pounds pressure of steam. The inlet of each fan is directly connected to a heater containing approximately 2,250 linear feet of 1-inch pipe divided into 3 sections, each section being supplied with exhaust steam through a 2 1/2-inch connection from the exhaust main in the dye room. The horizontal bottom discharge of each fan is connected to the space above the false ceiling at either end of the dye room.

The heated air is blown into the space above the false ceiling, escaping through the 2-inch longitudinal opening in the center and striking the deflector shoots towards the outer walls, keeping close to the ceiling. The 1/4-inch asbestos slate covering is kept sufficiently warm to prevent condensation on the ceiling; the heated air absorbs a large amount of moisture, carrying it out the ventilating flues. At the same time a good circulation is caused by the suction of the air blowing swiftly across the ceiling and up the vents. Three lines of 1-inch pipe are placed in the center of the false ceiling space for heating purposes in the coldest weather in case the air cannot be sufficiently heated with the heaters.

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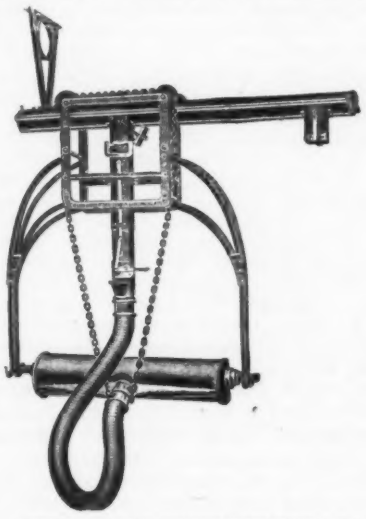
The imports into the United States in 1909 amounted to $62,010,286, more than one-half of which consisted of laces and embroideries.

## THE GUSTAV AUTOMATIC DUST REMOVER.

Cotton cards are usually stripped four to six times a day, according to the quality of the cotton, which means that the dust and fluff accumulating between the pins of the card clothing is brushed out and distributed throughout the card room. The stripping brush, weighing from 65 to 70 pounds, is carried from one card to another, placed in the brackets, and throws the dust out by



THE GUSTAV AUTOMATIC DUST REMOVER.

rotation in a direction opposite to the movement of the card cylinder. Regular stripping of the cards is a necessity, as good carding and quality of the material depends upon good cleaning, and it is obvious that the workers have to breathe the dust spread by the stripping brush. Every mill owner should, therefore, be interested in good and easy dust removal, not only to guard the health of the workers, but also to secure a perfect product.

The present practice is to use fans for the removal of the dust spread out by the brush. The ducts are either placed overhead or below the floor of the carding room. A fan or air pump placed at the end of the ducts sucks the dust and forces it into the dust collector. The stripping brush is provided with a cover fitted to a length of flexible hose. The ducts are provided with outlets at every card or between every two cards to which the brush cover with the suspending hose is attached during the stripping of the cards next to that outlet. As soon as the stripping is finished the stripping brush with its cover and hose is carried to the next card and put in the brackets. The nozzle of the dust main is opened by removing the cap or opening a valve, and the hose is attached to the nozzle.

To improve this method Victor Gustav, I. Schottenring 25, Vienna, Austria, has perfected a device for stripping the cards automatically. As shown in the illustration, the device consists of a trolley carrying a support for the brush. The track on which the trolley runs serves at the same time as a suction main, on the end of which a fan is placed. The trolley is operated by a chain or by hand and opens the suction opening of the dust main provided above each carding engine. The stripping brush is taken from the support and placed in the requisite brackets to the right or left hand, and the dust sucked from the card is forced into the dust collector. After stripping the brush is again placed in the support and moved to the next card. In new mills underground dust mains may be provided, when the brush is carried along on rails.

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The imports of wool into the United States for the manufacture of carpets amounted to 136,220,511 pounds valued at $16,706,728 in 1909, or more than double that imported in 1908. The increased importation has continued in 1910, amounting in the first four months to $5,203,876, against $4,827,022 in the same period in 1909, and $1,993,843 in the 1908 period.

The imports into the United States from Australia of wool for clothing purposes greatly increased last year, reaching 143,801,339 pounds, valued at $31,168,481, or more than double the imports in 1908, and even 50 per cent. higher than in 1907. The direct imports of this wool from Australia last year were 35,177,946 pounds, worth $8,697,451.

# *Mill News*

Those interested in receiving early and more complete investigated information of projected new mills, enlargements, improvements, fires, facts and gossip of the trade are referred to the TEXTILE ADVANCE NEWS, issued weekly by the publishers of the TEXTILE WORLD RECORD, at $15.00 per year.

## COTTON.

**New Mills.**

*Alabama, Ragland. Good progress is being made on the project of W. T. Brown to establish a cotton mill here and application will be made within a short time for a charter for the Brown Cotton Mills, with capital stock of $200,000. Mr. Brown proposes to build a 10,000 spindle plant, with 500 h. p. steam plant, and will invite bids for building just as soon as plans now under consideration are completed. It is said that coal will be mined within 200 ft of the power plant.

*Georgia, Columbus. The Meritas Mills have organized with Alvin Hunsicker, president; W. T. Thatcher, secretary and treasurer, and J. T. Broadbent, agent. Construction work will be started immediately on buildings and they advise manufacturing will be started about March, 1911. The initial installation will be 10,000 spindles and 170 looms for making cotton drills and ducks, operating by electric power from the Hydro-Electric Co. Later it is planned to increase to 25,000 spindles. Mr. Hunsicker is connected with the Standard Oil Cloth Co., 320 Broadway, New York City.

*Georgia, Villa Rica. It is reported the foundation for a 10,000 spindle cotton mill is being laid by the Villa Rica Cotton Oil Co. This department will begin operations with 2,500 spindles, driven by a steam power plant. About $70,000 will be the initial expenditure.

*Massachusetts, Fall River. Substantially all the $800,000 capital stock of the Charlton Mills has been subscribed and construction work will be started on buildings as soon as plans now being drawn by Wm. T. Henry are completed. The spinning mill will be 3 stories high with room for 18,000 mule spindles and 34,000 ring spindles. The weave shed will be of the saw-tooth roof type and will have capacity of 1,300 looms. There will be separate steam power plant. Provision will be made for future enlargements. This is to be a strictly fine and fancy cotton goods mill and the product will be sold direct. Earl P. Charlton is president and James Sinclair, treasurer and buyer.

*Massachusetts, Fall River. Organization has been effected by the Puritan Mills with Herman G. Myers, president; Edwin N. Blinn, treasurer, agent and buyer. About June 15 work will be begun on the plant in Assonet and they plan to begin the production of goods by October 15. The equipment will include 3,584 ring spindles for manufacturing 4s to 30s yarn from cotton waste. They will also make cotton batting, comforters, wrapping twine, window cord, clothes lines, mops, machine waste and carpet warp. The plant is to be operated by water and oil engine. In addition to the officers the Board of Directors includes Louis R. Bergeron, Fred'k R. Johnson, John A. Clorite, Wm. Hutchinson and Alexander Lockhart. The company is incorporated under the laws of Massachusetts with capital stock of $50,000.

*Massachusetts, New Bedford. The Sharp Mfg. Co. has been incorporated with capital stock of $1,500,000, classified as $1,200,000 common stock and $300,000 preferred stock. Construction work will be started at once on buildings, which will be located at the northwest corner of Rockdale Ave. and Dartmouth St. An 80,000-spindle mill, 5 stories high will be erected. Fine combed yarns will be manufactured and the initial equipment will be 60,000 spindles. The list of officers of the corporation are as follows: Joseph T. Kenney, president; Charles P. Curtis, vice-president; Arthur R. Sharp, treasurer and general manager. These men with Frank Brewster of Boston and Wm. H. Bent of Taunton form the board of directors. Robt. Schofield will be superintendent of the mill.

*Massachusetts, New Bedford. Construction work is progressing rapidly on buildings for the Neild Mfg. Co., the spinning mill being up two stories. A gang is working on the foundation for the weave shed and the foundation for a cotton storehouse has been started.

*North Carolina, Hickory. Good progress is being made on buildings for the plant of A. A. Shuford Mill Co., organized several months ago with capital stock of $100,000 to build a 3,000-spindle cotton yarn mill. They expect to begin manufacturing about October 1, making 4s to 8s yarns. The initial equipment will be 3,024 ring spindles operated by electric power.

North Carolina, Lumberton. The Jennings Cotton Mill will build a 1-story brick structure 131 by 463 ft. and install 8,000 spindles for making hosiery yarns. A steam power plant will be built adjoining the main mill. It is expected that construction work will be started on these buildings at once and that machinery will be installed ready for manufacturing October 1. This company was organized last December with capital stock of $250,000. H. B. Jennings, treasurer and secretary of the Dresden Cotton Mills and the Lumberton Cotton Mills, Lumberton, N. C., is president and treasurer of the company and F. P. Gray, secretary and assistant treasurer.

*North Carolina, Thomasville. The mill building for the Amazon Cotton Mills has been completed and the work of installing machinery will be

started in July. Manufacturing will be begun in September. The initial equipment will be 5,800 spindles. J. W. Cannon of Concord, N. C., is president; J. F. Cannon, Concord, vice-president, and C. G. Hill of Thomasville, secretary and treasurer.

Oklahoma, Oklahoma City. The Oklahoma Bag & Cotton Mills Co. has been incorporated with capital stock of $1,000,000 by M. L. Berry of Oklahoma City, F. D. Ross of Lawton, Okla., W. L. Gassoway and John T. Woodside of Greenville, S. C., and R. G. Gaines of Central, S. C. A plant will be built on land N. E. of the city for making yarns, weaving bagging, manufacturing bags and bleaching and finishing and printing the output. It claimed the cotton mill will have capacity of 10,000 spindles and 300 looms, while the capacity of the bleaching and printing department will be 50,000 yards daily. Plans have been completed for a 2-story main mill, 79 by 450 ft.; bagging plant, 1 story high, 75 by 300 ft.; power house, 50 by 140 ft.; also 100 cottages for operatives, etc. A 3,000,000-gallon water reservoir also will be constructed. All construction work is to be of concrete. Mr. Berry was formerly connected with the Mills Mfg. Co., of Greenville, S. C. John T. Woodside is president of the Woodside Cotton Mills, Greenville, S. C. W. L. Gassoway is president of the National Bank of Greenville, and R. G. Gaines is president and treasurer of the Isaqueena Mills, Central, S. C.

*South Carolina, Abbeville. J. Allen Smith, president of the National Bank of Abbeville, will be president of the Long Cane Mills, recently incorporated with capital stock of $200,000 to build a cotton mill. About $100,000 has been subscribed.

*Virginia, Alta Vista. Contracts have been awarded by the Alta Vista Cotton Mill Co. for machinery equipment to include about 13,000 spindles and 300 looms for manufacturing fine lawns. The main building will be 300 by 125 ft., 2 stories high and will be built at once. A. C. Hutchison, Charlotte, N. C., will be president and treasurer and Whitted & White, Charlotte, are the engineers in charge. T. V. Elson of Alta Vista, and J. E. Law of Esmont are among the organizers. The buildings will include a main structure, 300 by 125 ft., separate boiler and engine rooms and 50 cottages for operatives. The plant is to be run by electric power.

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**Enlargements and Improvements.**

*Alabama, Roanoke. The W. A. Handley Mfg. Co. has begun the erection of the proposed addition, which will be 2 stories high and is to be equipped with 120 looms. Details of this enlargement have been given previously.

*Connecticut, Taftville. Practically all the construction work on the first of the new weave sheds for the Ponemah Mills is completed, the only remaining work being the building of bridges at either end. The new structure is 700 by 200 ft. Work was started on this building last July.

Delaware, Wilmington. The capital stock of Joseph Bancroft & Sons Co. has been increased from $3,000,000 to $5,000,000. Extensive repairs and enlargements have recently been made in the Wilmington plant and a few months ago the company purchased the Reading Cotton Mills of Reading, Pa., from Garner & Co., and on completion of alterations are to operate the plant on Hollands, book cloths, etc.

Georgia, La Grange. The Unity Cotton Mills will build an addition for balling and winding machinery.

Georgia, Manchester. The Manchester Cotton Mills will build an addition and install 108 new looms, also extend the cloth warehouse 50 by 100 ft. These improvements entail an expenditure of $40,000.

Georgia, Raccoon Mills. Application for a charter has been made by a $150,000 concern to be known as the Berryton Mills. The new company will take over and operate the Raccoon Co.'s mill and the buildings will be put in good condition and new building erected. It is said 5,000 spindles will be installed. They also propose to start a hosiery mill annex. The plant has been shut down for some time and neither buildings nor machinery are in very good condition. The name of the town will be changed to Berryton in honor of John M. Berry of Rome, Ga., who is backing the enterprise and who will probably be elected president of the new company. Details of new buildings to be erected are not fully decided, but tentative plans call for a 5,000 spindle yarn mill, a new warehouse, and houses for operatives.

Maryland, Alberton. Additions will be made to the power facilities of the Alberton Cotton Mills, J. S. Gary & Son, by the replacing of the old wooden dam with a concrete structure 30 by 300 ft. Contract for this work has been awarded. It is rumored that extensive enlargements will be made to the mills following the completion of these improvements. The office of the company is in the Equitable Bldg., Baltimore.

Massachusetts, Lowell. The Lowell Textile Co., which occupies part of the mill of Geo. C. Moore in North Chelmsford, is having a bleaching shed built.

*Massachusetts, Lowell. No plans have been made for the small additions to be built for the Tremont & Suffolk Mills, and it has not been announced which departments will be enlarged.

*Massachusetts, Lowell. Work has been started on the new 5-story mill, 85 by 375 ft., for the Massachusetts Cotton Mills.

*Massachusetts, New Bedford. Work on previously reported alterations at the plant of the Beacon Mfg. Co. have been started. The product of the plant is sold ahead for several months and there are comparatively no finished goods on hand. Some of the looms are being operated night and day. In spite of this rush of business, the management has decided to adhere to the policy established several years to close the first week in August to give the operatives a vacation.

Massachusetts, Thorndike. The Thorndike Co. has installed a new engine in No. 2 Mill capable of driving all the machinery during the period of low water, also a fuel economizer.

*Massachustts, Three Rivers. Construction work has been started on the proposed concrete dam to be built in connection with the hydro-electric development of the Palmer Mill of the Otis Co. It is stimated that the minimum h. p. will be about 500 and the maximum about 3,000. About one year will be necessary to complete the project.

New Hampshire, Dover. The Pacific Mills have broken ground for a new storehouse for the Cocheco Dept., which will be 300 by 150 ft.

New Jersey, Mount Holly. Two additional warp beaming machines are to be installed in the plant of the Royle & Pilkington Co.

*New York, Capron. The Sauquoit Spinning Co., which has taken over the plant of the Utica Cotton Co., has organized with W. J. Frisbie, president; Frank A. Bosworth, vice-president; A. M. Waterbury, secretary; Geo. A. Frisbie, treasurer, and James G. Merriam, superintendent. The capital stock is $600,000. The new company will install new machinery for manufacturing cotton yarns, disposing of looms and some of the old spinning equipment, as noted in an earlier report. Extensive repairs are to be made on buildings and the water power which now develops about 200 h. p. will be further developed.

North Carolina, Cliffside. A bleaching and dyeing plant is being installed in the Cliffside Mills, manufacturers of staple ginghams. Extensive additions have been made to this plant in the last year.

*South Carolina, Cateechee. The Norris Cotton Mills Co. plan to purchase 234 Northrop looms to replace the balance of their old looms. A year ago they replaced 218 old looms with Northrop looms.

North Carolina, Durham. Contract has been awarded by the Golden Belt Mfg. Co. for the erection of a 3-story building, 120 by 75 ft., to cost $30,000. The bag department is to be enlarged. Salmon & Salmon of Durham will do the construction work.

*North Carolina, Mayodan. At present the Mayodan Mills will not make public any information on plans they have for enlarging their plant. The capital stock was recently increased from $300,000 to $1,000,000.

South Carolina, Chester. A weave room is to be added to the Wylie Mill. To provide funds for this enlargement and for working capital the directors have decided to add $150,000 to the capital. About 500 looms will be installed in the new weaving room. Heretofore yarns only have been made.

South Carolina, Lando. The Manetta Mills will add 40 looms. They make cotton blankets, flannelettes and similar goods.

*South Carolina, Liberty. On July 1 the contractor will begin work on a 2-story addition, 87 by 104 ft., for the Calumet Mfg. Co., which will be equipped with 200 looms. This will give them equipment of 8,196 spindles and 200 looms. G. Lang Anderson is president, treasurer and buyer, and I. W. Wright is superintendent.

*South Carolina, Simpsonville. Plans for enlargements for the Simpsonville Cotton Mills, for which the capital stock was increased from $150,000 to $500,000, are as follows: An addition to the mill, 132 by 290 ft., 2 stories high, is being built and machinery has been purchased which will increase the present equipment to 25,088 spindles and 600 looms. The present 1-story building will be used exclusively as a weave shed. Two additional warehouses will be built, also 50 cottages. J. E. Sirrine of Greenville, S. C., is the architect and engineer and the Gallivan Building Co. of Greenville is doing the construction work. The entire plant will be operated by electric power.

**Mills Starting Up.**

North Carolina, Lexington. The Dacotah Cotton Mills have begun manufacturing. It is over a year since operations on the building of this plant were begun and the work of building the mill and equipping it with machinery has been carried on steadily under the supervision of C. A. Hunt, Jr., president and superintendent of the company.

South Carolina, Orangeburg. The Orangeburg Mfg. Co. has resumed manufacturing after a shutdown of several weeks. It is said the mill will be run steadily from now on.

**Mills Shutting Down.**

South Carolina, Bamberg. The Bamberg Cotton Mills Co. has shut down its plant for the summer owing to the state of the raw cotton market. Free house rent will be furnished operatives while the mill is closed.

## WOOLEN.

**New Mills.**

*Massachusetts, Lawrence. It is reported that B. F. Smith Co. have been awarded contract for the construction of buildings for the Shawsheen Spinning Co., the new merino yarn mill to be built by Wm. Whitman, and have sub-let contract for clearing the land and excavating to Phillip Holland, a local contractor.

*New Jersey, Camden. Clark & Jones, who have been fitting up the building at 2d and Erie Sts. for spinning worsted yarns on the Bradford system, report that they now have all their machinery in, and in operation, with plenty of business on hand. The plant contains 1,280 spindles and 2 cone winders, which they are operating on yarns up to 32s, put upon dresser spools, bobbins, skeins and cones and in fact any way the user desires. They sell direct and also do commission spinning. Augustus P. Clark is the superintendent and Franklin E. Jones, buyer.

Pennsylvania, Erie. John C. Tauber of Spartanburg, Pa., has leased the upper story of the Mayer Block on 15th and State Sts., and will begin to manufacture within a short time, under the name of the John Tauber Woolen Mills. Mr.

Tauber is president of the Tauber Woolen Mills at Spartanburg, who make wool knit goods and wool batting.

Pennsylvania, Philadelphia. Messrs. Taylor Bros., who started up the Conshohocken Spinning Co., in West Conshohocken, during the fall of 1909, have removed to Leverington Ave. and Wilde St., Manayunk, where they are operating 2 sets, 1,140 mule spindles, on woolen and merino yarns, 6 cut to 24 cut, for weaving and knitting purposes. The plant will be conducted in the future under the name of the Beaver Spinning Co., with Samuel E. Taylor as superintendent and buyer. They sell direct and also spin on commission. The mills formerly occupied by them in West Conshohocken have been sold to other parties who will re-equip them for the manufacture of paper.

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**Enlargements and Improvements.**

*Connecticut, Bridgeport. A small 4-story building is to be erected by the Salt's Textile Mfg. Co. and will be used for a heat economizer system and additional boiler room space.

Connecticut, Mechanicsville. The French River Textile Co. advises that there is absolutely no truth in the report that their plant at Mechanicsville was sold to the Putnam Light & Power Co. Both the Mechanicsville and Woonsocket plants are runing night and day and the company is advertising for additional help. Plans and specifications for a large addition to the Mechanicsville plant, which will double their capacity, have just been completed and are now in the hands of contractors for bids.

*Massachusetts, Globe Village. Work has been started on the new power plant for the Hamilton Woolen Co.

*Massachusetts, Holyoke. The new 6-story factory building of the Farr Alpaca Co. on Bigelow St. is expected to be completed about Sept. 1. The roof is now being put on and the work of finishing up the interior will be pushed forward as rapidly as possible. As noted, when the new mill is ready for occupancy, the machinery now in an old mill will be moved into it and the old building torn down to make room for weave sheds.

Massachusetts, Holyoke. Twelve new looms are being added to the equipment of the Germania Mills.

Massachusetts, Monson. Extensive repairs will be made to the plant of A. D. Ellis & Co. and the mill has been closed to facilitate this work. The pond has been drawn off and a new flume is being put in. Several weeks will be required to complete this improvement and the mill will not be started up until this is completed. A weave room and engine house are also being added.

Massachusetts, North Billerica. Improvements have been completed in the carding department of the Faulkner Mfg. Co.

*Minnesota, Fergus Falls. The new Fergus Falls Woolen Mills Co. will take over the business of the old Fergus Falls Woolen Mills. The present mill has been in operation twenty years and they are building a new mill to manufacture under more modern conditions. In addition to making the line of woolen goods that has been made in the old mill, they will also make heavy knit ribbed underwear. No provision has been made for the equipment of this department. Gunder Bartelson is president; A. G. Anderson, treasurer; I. J. Boyum, manager and buyer. The new mill will have complete dye house and the machinery will be operated by electric power. Mr. Boyum has withdrawn from the Fergus Falls Knitting Works to enable him to give more attention to the new woolen mill.

New Hampshire, Newport. A weave shed, 90 by 90 ft., will be built at once for the Brampton Woolen Co. and will be equipped with 64 broad looms. Two sets of cards, 2 mules, 22 looms and 1 fulling mill will represent the additional machinery. V. J. Brennan is general manager of the Brampton Woolen Co.

*New York, Oriskany Falls. It is planned to rebuild at once the woolen yarn mill of Hatheway & Reynolds, which was recently burned with loss of several thousand dollars. Practically all the machinery equipment was destroyed.

Ohio, Piqua. Nos. 1 and 2 Mills of the Orr Felt & Blanket Co. have been equipped with 2 sets of worsted cards, 44 broad looms, 2 washers, 2 fulling machines and dyeing machinery. Samples of worsted goods are now being made and this new department will be started in a short time.

Pennsylvania, Philadelphia. Wolstenholme & Clarke are removing their plant from Leverington Ave. and High St., Manayunk, to their new building at 24th St. and Allegheny Ave. In the new location they will have 14 cards, 14 combs and 36,000 spindles operating on worsted yarns 13s to 75s on the French system.

Pennsylvania, Tunkhannock. The Winola Worsted Yarn Co. is building a water tank for its plant, of 10,000-gallons capacity.

Pennsylvania, Valley Forge. William Lund & Son, manufacturers of worsted yarns on the Bradford system, with 3,000 spindles, are reported as about to have an addition erected to their plant which will be 60 ft. deep with frontage of 72 ft., which will be entirely fireproof, and enable them to increase their spinning capacity. The production of the plant is sold direct from the mill and through the office and warehouse at Mascher St. and Lehigh Ave., Philadelphia.

Rhode Island, Bridgton. Foundation for a new boiler house at Wm. H. Prendergast's mill has been completed. Work has just been started on foundation for a new dye house.

*Rhode Island, Esmond. Six sets of cards are being installed in the Esmond Mills and within the next few months the capacity will be increased about 25 per cent. In addition mule spinning machinery and looms have been contracted for.

*Rhode Island, Woonsocket. The present capacity of the Woonsocket Worsted Mills which has been enlarged by the removal of the Staf-

ford Worsted Co. of Stafford Springs, Conn., to the Woonsocket plant, is 12 worsted cards, 10 combs, 11,046 spinning spindles and 5,078 twisting spindles. As noted previously, a small addition to the building is being constructed.

Wisconsin, Sheboygan Falls. A new dye house is to be built for the Brickner Woolen Mills Co.

**Mills Starting Up.**

Massachusetts, Pittsfield. The Berkshire Woolen & Worsted Co. is the name of the new company organized to take over the upper mill property, or woolen mill, of the J. L. & T. D. Peck Mfg. Co. The new company has not taken over the cotton mill and they cannot state definitely at this time just what the future of that property may be. The Berkshire Woolen & Worsted Co. has capital stock of $400,000. Ralph D. Gillett is president; A. W. Eaton, vice-president; James R. Savery, treasurer, and James Chapman, secretary. It is understood the mill is to be started as soon as possible with D. T. Noonan, formerly superintendent of Amos Abbott & Co., Inc., Dexter, Me., in charge of manufacturing. A finer grade of goods than has been made heretofore in the mills will be manufactured.

Pennsylvania, Bridgeport. The Sterling Mills Co. have been reorganized with capital stock of $100,000 and are operating the plant to its full capacity. They have 5 sets of cards, 2,500 spindles and 38 looms run on cassimeres, the production now being sold direct. Isaac Taylor is president; A. W. Walter, secretary and treasurer, and Samuel Hird, superintendent.

*Tennessee, Nashville. Manufacturing will be resumed immediately in the plant of the Nashville Woolen Mill Co. under the management of Will L. Rodgers, president and treasurer, and W. H. Durkee, manager. The plant contains 5 woolen, 3 cotton and 3 shoddy cards and 44 broad looms, and will be operated on men's wear cassimeres.

Wisconsin, Jefferson. Owen & Sons Co., who leased the old woolen mill formerly operated by Cairns, McDonald & Co., have begun manufacturing and are employing about 15 hands in the manufacture of woolen yarns. They contemplate starting a knitting department to use some of the yarn production. The old plant, which was operated under the name of the Woolen Mfg. Co., has been idle for several years.

**Mills Shutting Down.**

Pennsylvania, Philadelphia. The Empire Cloth Manufacturing Co., Baker St. and Leverington Ave., Manayunk, of which Frank S. Harrison is the treasurer and A. Gill, superintendent, has been shut down and will not be started up again, the intention of the owners being to sell out. The plant, which contains 44 broad looms, was operated by the company on rain cloths and worsted men's wear.

Pennsylvania, Philadelphia. The Leia Woolen Mills, of which Charles Nemtof is the proprietor, located at Adams and church Sts., Frankford, containing 10 broad looms which he operated on men's wear worsteds, are closed and for sale.

Pennsylvania, Philadelphia. The Unity Worsted Company, located in the Lomax Mills, at Jasper and Orleans Sts., where they are manufacturing plain and fancy worsteds on 80 broad looms, are offering for sale their equipment preparatory to removal. The company refuses to state whether they will remove to another state or whether it is their intention to return to England, where the owners are located.

## SILK.

**New Mills.**

*New York, Waverly. A charter has been granted the Waverly Silk Ribbon Co. with capital stock of $30,000 and organization has been effected with Wm. V. Romary of Newark, N. J., president; Joseph A. Weston, also of Newark, secretary and treasurer. Contract has been awarded for buildings which will be equipped for the manufacture of silk ribbons.

*New Jersey, East Rutherford. The mill building for the Georgian Plush Mills, owned by Geo. Schmiedel, is now in course of construction and will be 180 by 40 ft., 2 stories high. Ten broad Knowles velvet looms, with necessary finishing machinery, will be the initial equipment. The building is designed for 35 looms and additional machinery will be added as the business increases.

**Enlargements and Improvements.**

Connecticut, Mystic. When the looms recently ordered are installed in the Ninigret Mills, the equipment will be 162 looms.

*Connecticut, Stonington. The addition to the plant of the American Velvet Co. is nearly completed and in a very short time it will be ready for the installation of machinery.

*New Jersey, Burlington. Contract for the erection of the first buildings for the new plant of the Burlington Silk Mills has been awarded to James Lanning, a Trenton contractor, and work will be started within a few days. The Burlington Silk Mills are owned by Martin L. Cohn & Co. of New York. Other particulars of the proposed new plant have been given.

New York, Glendale. The Bay View Ribbon Co. has moved from 46th St. and 2d Ave., Brooklyn, to Glendale. It has been voted to make an increase in the machinery equipment. Silk ribbons are manufactured.

## MISCELLANEOUS.

Illinois, Chicago. Plans for the new dye works to be built by Fred Strauss, proprietor of the Strauss Dye Works, have been completed and buildings will soon be erected. The new plant will be located on property recently acquired at the S. E. corner of Shefield Ave. and Marianna St., and it is estimated will cost about $125,000.

*Indiana, Monticello. Within a few weeks oper-

ations will be started on the work of doubling the capacity of the Chicago Thread Mfg. Co. They recently purchased land adjoining the present plant.

Massachusetts, Fitchburg. Manufacturing will be resumed shortly in the Houghton Web Co.'s old mill, which has been taken over by the Fitchburg Elastic Web Co. Harry C. Winton is treasurer and manager of the new company, which will make elastic and non-elastic webbing on 14 looms.

*Massachusetts, Gardner. There are signs that the Eastbrook Co., the new company controlled by the Oxford Linen Mills of North Brookfield, intends to put the Riverview factory building in shape for manufacturing as early as possible. Representatives of the Oxford Linen Mills have been here arranging details of necessary changes in the building. Nothing definite has been done in the matter of power, but it is understood the Connecticut River Power Co. will supply electricity to operate the machinery.

*Massachusetts, Lawrence. It has been decided to use reinforced concrete extensively in the construction of additions for the Pacific Mills and contracts have been placed with the Aberthaw Construction Co., Boston, for two reinforced concrete floors, with columns, in the 720 by 85 ft. printing building; 1 floor and roof in the dye house, 994 by 251 ft.; 3 floors of mushroom type of construction in the finishing building, 600 by 90 ft.; and the floors of the power station, 330 by 85 ft.; a concrete coal pocket was also included in the contract. These buildings comprise nearly 16 acres of concrete floor construction. L. E. Locke of Lawrence, Mass., is the general contractor for the brick and timber work, and Lockwood-Greene & Co., Boston, Mass., are the architects.

Massachusetts, Webster. Extensive additions and alterations are to be made in the plant of the Stevens Linen Works and plans are being prepared by Chas. T. Main, mill-engineer and architect, Boston. There will be a new hackling and carding building, 289 by 70 ft., 2 stories high. Two old buildings will be torn down to make room for this new building. A new spinning and weaving mill, 197 by 76 ft., 3 stories and basement, is to be built south of the present No. 2 Mill. Other changes include the tearing down of a section 46 ft. long of No. 3 Mill to make room for a new blacksmith shop, 1 story high; the building of a steam turbine room on the present engine room; alterations on the boiler house to accommodate two additional boilers; extension of the coal pocket to take care of the additional requirements, and an additional story on the office building, which will be connected by a bridge with the weaving and spinning building. Plans will be ready for bidders in a short time.

New Hampshire, Epsom. Improvements and addition are being made to the mill of the Barmen Webbing Co., including the installation of an S. Morgan Smith Co. water wheel.

New Jersey, Dundee Lake. A 2-story building, 50 by 100 ft., is being built to the finishing plant of the National Silk Dyeing Co. of this place.

New Jersey, Hawthorne. The American Silk Dyeing & Finishing Co. has started to replace another of its frame buildings with a stone structure.

*New Jersey, Jersey City. The Bonte Cordage Works, recently incorporated with capital stock of $10,000, as noted, will manufacture jute and twine specialties and packings. They will begin operations some time in July. George H. Bonte is president, treasurer and buyer and A. L. Regan is superintendent. The plant is to be operated by electric power.

New Jersey, Paterson. J. Edwards Barbour will shortly begin the erection of a linen thread plant at Lakeview which he proposes to manage personally. The proposed plant will be located on South Second St., between Getty Ave. and the Erie Railroad, and will include a main building 100 ft. long and between 65 and 75 ft. wide, 3 stories high, of brick construction. About 100 hands will be employed at the start and this number will be gradually increased. Plans are at present in the hands of the architect. Mr. Barbour is connected with the Sutherland & Edwards Co. of Paterson, N. J., and the Allentown Spinning Co., Allentown, Pa., and recently withdrew from the Barbour Flax Spinning Co. of Paterson.

New York, Brooklyn. A plant for dyeing braids, elastic webbings and millinery goods has been established at the corner of Smith and Huntington Sts. by the Parsons Dyeing & Cleaning Co. Nathan G. Parsons is buyer.

New York, Newfane. Plans have been completed for an addition for the Lockport Felt Co.'s plant.

*New York, New York City. Machinery is being imported from Germany for the Liberty Lace & Netting Works, recently incorporated. A location has not been decided upon, but this matter will be settled before the machinery arrives.

*Pennsylvania, Chester. The Robert E. Clark Thread Co., about whom mention has already been made in these columns, have a portion of their plant at 126-28 E. 6th St. installed and in operation, and other machines on the way. They report business already on hand and expect to have their plant going in full on sewing thread and spool cottons, which they will sell direct.

Rhode Island, Pawtucket. The American Textile Co. is planning to practically double its capacity. Additions will include the building of an enlargement to the mill on Esten Ave. This work will be started right away. For some time the company has had under consideration a plan for increasing the output owing to the increasing demand for its product. It is reported that 30 lace making machines are to be installed in the additions, making a total of 66 machines operated by this company. The new building will be 1 story high of saw-tooth construction and it is expected will be completed in about 3 months. This is another step in the direction of making Pawtucket the lace-making center of this country.

# Personals.

G. A. Anderson has been elected president and treasurer of the Calumet Mfg. Company, Liberty, S. C., succeeding H. L. Clayton, who resigned.

J. B. Stroup, overseer of weaving at the Floyd Mills, Rome, Ga., has resigned to accept a position as overseer of weaving in the cloth room at the Aragon Mills, Aragon, Ga.

George L. Pope has accepted the position as overseer of carding at the Cleveland Woolen Mills, Cleveland, Tenn. He was formerly employed at the Knoxville Woolen Mills, Knoxville, Tenn.

Geo. Uhlig has accepted the position as overseer of dyeing at the Capital City Woolen Mills, Des Moines, Ia. He was formerly employed at the Andrews Mill, Frankford, Pa.

Frank Struck has been appointed overseer of spinning at the Western Linen Company, Duluth, Minn. He comes from Minneapolis, Minn.

Geo. F. Payne, formerly superintendent of the Queen City Cotton Company, Burlington, Vt., has accepted the position as general superintendent of the Harmony Mills, Cohoes, N. Y.

Daniel Clark, overseer of finishing at the Carleton Mills Company, Sangerville, Me., has severed his connection with that company. He is succeeded by Geo. Merrow.

Anthony Moore, superintendent of the American Thread Company's mill, Holyoke, Mass., has resigned to accept a similar position with the N. E. Cotton Yarn Company, Fall River, Mass. He was given a farewell banquet at the Marble Hall Hotel.

Frederick M. Daniel, superintendent of the Sulloway Hosiery Mills, Franklin Falls, N. H., has been taken to the hospital at Baltimore, Md., for medical treatment.

James M. Bourne, for the past five years superintendent of the Pontiac Bleachery, Pontiac, R. I., has severed his connection with that company.

V. B. Bogan, second hand in the weaving department at the Royal Bag & Yarn Mill, Charleston, S. C., has resigned to accept a position as overseer of weaving at the General Asbestos Rubber Mfg. Company, same place.

S. H. Bevill has accepted the position in charge of the weaving at the Glen-Lowry Mfg. Company, Whitmire, S. C. He comes from the Orr Cotton Mill, Anderson, S. C.

H. E. Kohn, overseer of weaving at the Glen-Lowry Mfg. Company, Whitmire, S. C., for several years, has severed his connection with that company.

J. P. Wood has accepted the position as overseer of carding and spinning in the Union Mills, Lafayette, Ga.

J. C. Kenny has accepted the position as overseer of spinning at the Winder Cotton Mill, Winder, Ga.

W. A. Wofford succeeds W. E. Myers as overseer of the cloth room at the Saxon Mills, Spartanburg, S. C. He comes from the Pacolet Mfg. Company, Pacolet, S. C.

Jno. L. Robinson, assistant superintendent of the Locke Mills, Concord, N. C., has resigned to accept a position in Denver, Colo.

S. J. Davis has accepted the position as overseer of spinning at the Roanoke Mills Company, Roanoke Rapids, N. C. He comes from Tarboro, N. C.

W. H. Edwards has accepted a position as overseer of slashing at the Indian Head Mills of Alabama, Cordova, Ala. He was formerly employed as slasher tender at the Dallas Mills, Huntsville, Ala.

C. H. Cole, superintendent of the Lois Mill, Douglasville, Ga., has severed his connection with that company to accept the position of superintendent of the two mills at Rockingham, N. C.

B. G. Rhyne has accepted the position as overseer of spinning in the new mill at Martinsburg, Va. He comes from McColl, S. C.

J. E. Bowers, overseer of carding at the Aragon Mills, Aragon, Ga., has resigned to accept a position at the Abington Mills, Huntsville, Ala.

J. E. Wright has been promoted from the position of overseer of finishing to that of superintendent of the Locke Mills, Concord, N. C.

Clayton Hooks has accepted the position as overseer of spinning and spooling at the Marlboro Mills, No. 4, McColl, S. C. He comes from the Everett Mills, Monroe, N. C.

M. B. Pitts has been appointed general manager of the Toccoa Cotton Mills, Toccoa, Ga. He comes from Columbia, S. C.

James Hendry has accepted the position as designer at the Jewell Brook Woolen Company, Ludlow, Vt.

James J. Armstrong has accepted the position as overseer of carding at the Hamilton Cotton Company, Hamilton, Ont., Canada. He comes from Easthampton, Mass.

Richard Gough has been appointed boss weaver at the Wallace & Smith Blanket Mills, La Porte, Ind.

F. A. Owen has again accepted the position as overseer of dyeing at the Davenport Woolen Mills Company, Davenport, Ia.

Alfred Rock has accepted the position as second hand in the card room at the Sheridan Woolen Mills, Ashuelot, N. H.

George J. Barry has accepted the position as master mechanic for the Merrimac Hat Company, Amesbury, Mass. He comes from Pittsfield, Mass.

Wm. Melbourne has accepted a position as overseer of night spinning for J. Broadbent & Son, Uuionville, Conn. He comes from Winooski, Vt.

W. N. Bryant, overseer of carding at the Waverly Mills, Laurinburg, N. C., has resigned to accept a similar position at Darlington, S. C.

W. S. Johnson has accepted the position as overseer of carding at the Lawrenceville Mfg. Company, Lawrenceville, Ga.

C. E. Barnes, overseer of weaving at the Milstead Mfg. Company, Conyers, Ga., has resigned and is now employed at Tallassee, Ala.

Bryant Pope has accepted the position of overseer of carding at the Highland City Mills, Talladega, Ala. He comes from Tallapoosa, Ala.

Henry Robertson has accepted the position as overseer of spinning at the Century Mfg. Company, South Boston, Va. He comes from Durham, N. C.

Vance Darnell has accepted the position of overseer of weaving at the Whitney Mfg. Company, Whitney, S. C. He comes from Spartanburg, S. C.

J. C. Byers, formerly at the Belmont Mill, Shelby, N. C., has accepted a position as overseer of carding at the Aragon Mills, Aragon, Ga.

E. N. Keller, formerly a student in the Textile Department of the A. & M. College, Raleigh, N. C., has accepted the position as overseer of carding at the Chadwick-Hoskins Mill, No. 5, Pineville, N. C.

Robert Broom, second hand of carding at the Dan River Mills, Danville, Va., has resigned to accept a position as overseer of carding at the Lockmore Mills, Yorkville, S. C.

John Riley, overseer of spinning and spooling at the Willingham Mills, Macon, Ga., has resigned to accept a position in the spinning room at Piedmont, S. C.

Charles Sanders has been promoted from second hand to overseer of spinning with the Ida Yarn Mill, Laurel Hill, N. C.

Edward F. Clegg, overseer of the combing department at the Coronet No. 3 Mill, Taunton, Mass., has resigned to accept a similar position at the Holmes Mfg. Company, New Bedford, Mass.

Albert D. Milliken, superintendent of the Globe Yarn Mills, Globe Village, Mass., who recently resigned, was given a farewell dinner by the overseers.

L. J. Morin has accepted a position as pay master and designer at the S. G. Hall Mfg. Company, Camden, Me. He was formerly employed at the Kennebec Mills, Fairfield, Me.

W. S. Griffin has accepted a position in charge of the spooling, spinning and warping at the Bellwill Mills, Wilmington, N. C.

W. E. Childs has been promoted from second hand to overseer of weaving at the Orr Mill, Anderson, S. C.

G. L. Anderson has been elected president and treasurer of the Calumet Mfg. Company, Liberty, S. C., succeeding H. L. Clayton, who resigned on account of ill health.

J. A. Baker has been appointed overseer of dyeing at the Roberdel Mill, No. 2, Rockingham, N. C.

John Miller, overseer of dyeing at the Mooresville Cotton Mills, Mooresville, N. C., has severed his connection with that company.

T. F. Hoy has accepted the position as overseer of weaving at the Seneca Cotton Mills, Seneca, S. C. He succeeds Geo. Witherspoon, who resigned.

W. J. West has accepted a position as overseer of weaving at the Young-Hartsell Mill, Concord, N. C. He comes from Social Circle, Ga.

J. P. McNeill has been appointed superintendent of the Locke Mills, Concord, N. C.

W. S. Porter, overseer of weaving at the Brookford Mills, Hickory, N. C., has resigned to accept a position in charge of the weaving, warping, slashing and drawing-in at the Courtenay Mfg. Company, Newry, S. C.

H. L. Gammage has accepted the position as designer at the Pontoosuc Woolen Mfg. Company, Pittsfield, Mass. He was formerly employed at the Beebe-Webber Company, Holyoke, Mass.

Chas. Haigh has accepted a position in the weaving department for J. B. Ryer, Son & Company, Paterson, N. J. He was formerly employed at Philadelphia, Pa.

M. W. Hudson has accepted the position as overseer of twisting, winding and beaming at the Anchor Duck Mills, Rome, Ga.

Israel Robinson has accepted the position as overseer of dressing at the Waucantuck Mills, Uxbridge, Mass., succeeding the late Thomas Nulty.

Daniel F. Welsh, overseer of finishing at the Cheshire Mills, Harrisville, N. H., has severed his connection with that company.

Andrew Fraser has accepted the position as overseer of carding at the Niantic Mills, E. Lyme, Conn. He was formerly employed at Mayo & Sons Mill, Inc., Foxcroft, Me.

Edward Coyle, overseer of carding at the No. 4 Wamsutta Mill, New Bedford, Mass., has severed his connection with that company.

Jos. D. Boucher has accepted the position as overseer of finishing at the Church Woolen Mills, Wegatchie, N. Y.

C. H. Keates has accepted a position as overseer of spinning at the Wilton Woolen Company, Wilton, N. H. He was formerly employed at Gonic, N. H.

James Rensehausen has accepted the position as overseer of finishing at the Cheshire Mills, Harrisville, N. H. He was formerly employed at the Bay State Mills, Lowell, Mass.

Arthur W. Gibson has accepted the position as master mechanic for N. D. White & Sons, Win-

chendon, Mass. He was formerly employed at the branch mill of the Champlain Silk Mills, Brooklyn, N. Y.

Wm. Walmsley, overseer of weaving at the Bernon Mills, Georgiaville, R. I., has severed his connection with that company.

W. H. Durkee, at present designer and superintendent of the Cleveland Woolen Mills, Cleveland, Tenn., has resigned to become manager of the National Woolen Mills Company, Nashville, Tenn.

James Hirst, superintendent of Harris & Company, Rockwood, Ont., Canada, has severed his connection with that company.

H. W. Kimball has accepted the position as superintendent of the Queen City Cotton Company, Burlington, Vt. He comes from the Imperial Cotton Company, Hamilton, Ont., Canada.

Frank Judson has accepted the position as overseer of finishing at the Yantic Woolen Company, Yantic, Conn.

Moses Barber, overseer of carding for E. Kenyon & Son ,Wyoming, R. I., has returned to Monson, Mass., to fill the position of overseer of carding at the Ellis No. 2 Mill. He formerly held this position.

J. L. Morin, overseer of weaving at the Rochester Woolen Company, Rochester, N. H., has severed his connection with that company to accept a similar position at Camden, Me.

Frank C. Sawtelle has been appointed assistant treasurer of the Sharp Mfg. Company, New Bedford, Mass., and it is understood later that he will be treasurer, which position is now being filled by Arthur R. Sharp.

Henry W. Taylor, of the firm of Schell, Taylor & Longstreth, cotton yarn dealers, with office at 230 Chestnut St., Philadelphia, died at his summer cottage at Ventnor, N. J., June 3.

J. C. Roberts, employed at the Haskell Silk Company ,Westbrook, Me., has resigned to accept a position at Riverside, Cal., where he intends moving his family later.

Robert Pilling, Jr., 31 years of age, hosiery manufacturer of Philadelphia, who had been suffering for some time with indigestion, attempted suicide by shooting at his home, 4809 Leiper St. He was interested in the Pilling & Madely Co., Huntingdon and Trenton Aves., and also in the Pilling Hosiery Mfg. Company.

Thomas Allen, overseer of the calender room at the Cocheco Print Works, Dover, N. H., has resigned, and is succeeded by Henry Boyd, who comes from Manchester, N. H.

Patrick L. Kenny, for over 35 years employed at the Pontoosuc Woolen Mfg. Company, Pittsfield, Mass., completed his duties there June 18. Mr. Kenny had invented one or two patents for improvements on spinning machinery during his time at the Pontoosuc Mill.

Thomas Waterhouse, overseer of the bleaching and finishing department at the Boston Duck Company, Bondsville, Mass., has severed his connection with that company. He intends locating on a farm at Monson, Mass.

F. L. Davis has been appointed superintendent of the Wilton Woolen Company, Wilton, N. H.; M. J. O'Brien, overseer of carding; Wm. Taylor, overseer of weaving; Hugo Shulze, overseer of dyeing and finishing and Chas. H. Keates, overseer of spinning.

J. B. Charlesworth has accepted the position as overseer of carding and spinning for J. Broadbent & Son, Unionville, Conn. He was formerly employed in a similar position with the Meredith Linen Mills of Meredith, N. H.

Wm. P. Clark, superintendent of the Manchester Mills, Woonsocket, R. I., has severed his connection with that company to accept a position as designer at the New York Mills, New York Mills, N. Y.

John Holtsizer has accepted the position as overseer of finishing and dyeing at the Laurel Mills Mfg. Company, Roswell, Ga. He comes from Philadelphia.

Henry C. Phillips, superintendent of the Harmony Mills, Cohoes, N. Y., has severed his connection with that company.

John W. Lord, overseer of the mule spinning department at the Gosnold Mills, New Bedford, Mass., fell four stories through an elevator shaft, striking on a concrete bottom. The physicians who examined him claimed he received no injury beyond a few bruises and a shock from the fall.

James H. Aspinwall, overseer of spinning at the Arkwright Mills, Fall River, Mass., has severed his connection with that company to accept a similar position with the American Thread Company, Willimantic, Conn.

Will Nelson has accepted the position as overseer of weaving at the Bernon Mills, Georgiaville, R. I. He comes from Lowell, Mass.

Thomas Dyson has been appointed designer and assistant superintendent at the Sutton Mills, North Andover, Mass., succeeding Charles P. Learned. Mr. Dyson comes from Philadelphia, Pa.

T. H. Cromer, superintendent, and G. C. Freeman, overseer of spinning with the Alexander City Cotton Mills, Alexander City, Ala., have both severed their connection with this concern to engage in business at this place.

J. W. Hampton, overseer of spinning at the Hampton Cotton Mills, Hampton, Ga., has resigned to accept a position at Douglasville, Ga.

E. Lockerson has been appointed superintendent of the new Gilreath Mfg. Company, Greenville, S. C. He comes from Atlanta, Ga.

G. B. McCracken, overseer of carding at the Mobile Cotton Mills, Crichton, Ala., has severed his connection with that company.

J. B. McFarland has accepted the position as overseer of weaving at the Milstead Mfg. Company, Milstead, Ga. He comes from Columbia, S. C.

## DEATHS.

Samuel Watson, at one time superintendent of the Narragansett Mill and later the Flint Mill of Fall River, Mass., and who conducted a business of his own manufacturing roping and banding, died May 27 after a short illness at the age of 81 years. Mr. Watson had made many gifts to the city of Fall River, among which was the soldier's monument at South Park and chimes of bells which are now in the tower of City Hall.

Archie Freeman, master mechanic at the Geo. H. Gilbert Mfg. Company, Ware, Mass., died in a hospital at Ware following a surgical operation.

Clarence E. Taylor, president of the Lion Mfg. Company, St. Johnsville, N. Y., which concern manufactures underwear, died at his home at the age of 47 years.

Alfred Anson, for many years overseer of the worsted spinning department at the Riverside Mills, Providence, R. I., died at his home, May 23. He is survived by a wife.

Jos. Loth, one of the most prominent silk ribbon manufacturers in this country, died at his home, 519 W. 150th St., New York City, at the age of 85 years. He was formerly in business at 65 Greene St. and was chairman of the charity committee of Mount Medo Lodge, No. 257, F. and A. M.

Thomas F. Nulty, overseer of dressing at the Waucantuck Mills, Uxbridge, Mass., died at his home on Oak St. in that town after a short illness of pneumonia. Mr. Nulty was very popular and had many friends.

John Arthur Osborn, for 11 years president and 21 years secretary of the Norwalk Mills Co., Winnipauk, Conn., died May 30. He resigned the office of president of this company when failing health rendered relief from care imperative. In business relations, political duties, affairs of the church and private friendship, always at his best, he was a noble example of manhood. At a special meeting of the board of directors held June 1 it was voted that a record be published and a copy be forwarded to his family, to whom they extended their most heartfelt sympathy in this irreparable loss.

Albert J. Clarke of the firm of Wolstenholme & Clarke, Leverington Ave. and High St., Manayunk, Pa., manufacturers of worsted and merino yarns, died May 27 at his home in Philadelphia.

R. D. Cole, president of the Newman Cotton Mills, Newman, Ga., died at his home in Newman at the age of 90 years. He was interested in several manufacturing industries as well as cotton mills, and was connected with the R. D. Cole Mfg. Company, the largest iron manufacturers of the South.

Ransom E. Smith of R. E. Smith & Son, wool dealers of Boston, Mass., died at his home in Malden, Mass., of pneumonia. He was born June 9, 1834, at Westminster, Vt., and was engaged in woolen manufacturing some years ago at Saxton's River, Vt.

John Booth, treasurer and founder of the Pawtucket Spinning Ring Company, Pawtucket, R. I., died at his home at Central Falls, R. I., at the age of 65 years. Mr. Booth was born in England and came to this country when a young man. He had spent the greater part of his life in the manufacture of spinning and twisting rings for cotton mills. Previous to going into this business he was employed at the Fales & Jenks Machine Company.

Louis T. Downes, one of the best known business men in the State of Rhode Island, died at his home, 484 Elmwood Ave., Providence, R. I. He was the founder of the Riverside Mills in that city. He had been an invalid for years and had not been actively engaged in business for some time.

Andrew Scotland, one of the most practical manufacturers of yarn and knit goods in this country, died at the home of his daughter, Mrs. A. D. Ralston, at Schaghticoke, N. Y., Tuesday, June 14. He was born in Edinburg, Scotland, April 21, 1831, and at an early age removed to Kincrossshire, Scotland, and received his education in the parochial school. In May, 1852, he came to America, where he started to work in the spinning department in one of the large mills in New York State. He started the machinery in the spinning department and later took charge of the same for the Schaghticoke Woolen Co. Later was engaged in mills at Waterville, N. Y., Bennington, Vt., and Winooski Falls, Vt. He also owned and operated what was known as the Winooski Falls Knitting Mills.

R. D. Cole, Sr., died at his home in Newnan, Ga., recently at the age of 90 years. He was one of the most highly regarded citizens of this section of the State. Mr. Cole and his deceased brother, M. F. Cole, were the founders of the R. D. Cole Mfg. Co. Up to the time of his death he was president of the R. D. Cole Mfg. Co. and the Newnan Cotton Mills.

Duncan M. Cook, formerly a well known mill superintendent, died at News Ferry, Va., recently. Up to nearly two years ago he resided at Franklinton, N. C., where he was manager of and stockholder in the Sterling Cotton Mills, which he conducted successfully until failing health forced him to retire. He was 50 years of age.

Nathaniel Buxton, who was connected with the Glenark Knitting Company, Woonsocket, R. I., about 15 years, died at the home of his uncle, C. B. Fillebrown, formerly president of the Glenark Knitting Company at Newton, Mass. He is survived by his wife and one child.

Walter H. Summersby, agent of the Atlantic Cotton Mills, Lawrence, Mass., died at his home, 125 Prospect St., June 23. He was one of the best known cotton mill men in this section of the country. He had been employed in mills in Suncook, N. H., Fall River, Mass., and Westerly, R. I., previous to taking the position at the Atlantic Mills. He was a member of the Textile Club, composed of mill agents; the Mystic Shrine, Odd Fellows and a Knight Templar.

## New Publications.

[Any work noticed under this head can be obtained through the office of this journal.]

The Jacquard Machine (Die Jacquardmachine); by Bruno Gross; Haun & Sohn, Reichenbach, Germany; 48 pages, 7 1/2 by 10. Price $1.

This hand book of the jacquard machine has been written for both students and mill men. It contains many excellent illustrations of the different parts of the machine. It is written in a concise, clear style, which results in a great deal of information being brought into a small compass. While dealing with the jacquard as built and operated in Germany, yet it will be found useful to American students and mill men who read German. The text is in German.

Modern Bleaching Agents and Detergents; by M. Bottler; D. Van Nostrand Co., New York; 159 pages, 4 1/2 by 7. Price $2.

This book is divided into two parts, the first being a review of the old and more recent bleaching agents and methods and an account of those of more modern origin. The second division treats of the behavior of textile materials under the action of chemicals. The following abstract of the table of contents shows the scope of the work: Old and New Bleaching Methods and Agents, Sodium Peroxide, Perborates, Oxone, Sodium Bisulphite and Hydrosulphurous Acid, Discharging Color from Textile Fabrics with Hydrosulphurous Acid, Permanganate, Hydrogen Peroxide, New Process for Bleaching Fats and Oils, Detergents, Benzine Soaps, Extractive Detergents and Detergent Mixtures, Carbon Tetrachloride, Bleaching Processes used in Chemical Cleaning, Hydrogen Peroxide as a Detergent, Oxygenol as a Detergent, Sodium Peroxide as a Detergent, Sundry New Detergents and Cleansing Agents.

The West of England Woolen Industry under Protection and under Free Trade; by Dorothy M. Hunter; Cassell & Co., London; 82 pages, 5 1/2 by 8 1/2. Price 25 cents.

This is one of the many tariff pamphlets which are being circulated throughout Great Britain by the advocates of protection and of free trade. The author, who is an advocate of free trade, presents her case clearly and convincingly, some of the chapters being of permanent interest by reason of their dealing with the history of the textile industry in England. The following is an abstract of the table of contents: The Indictment of the Protectionist, The West of England Cloth Trade, From Old Methods to New, Under Protection, General Progress of the Woolen Industry under Free Trade, Progress in the West under Free Trade, Why Mills Have Closed, Condition of the Workers, Probable Effects of Tariff Reform, Rise of other Industries.

Identification of the Commercial Dyestuffs; by Samuel Parsons Mulliken, Ph. D.; John Wiley & Sons, New York; 274 pages, 7 by 10. Price $5.00.

This is one of a series of volumes treating of the identification of organic compounds. It is written by a chemist of high standing who is assistant professor of organic chemical research at the Massachusetts Institute of Technology. The opening paragraph of the book which follows, states the reasons why such a handbook is needed:

"The latest edition of Metz's Year Book for Colorists and Dyers contains a list of 4,300 brands of coal-tar dyestuffs said to find application in the United States. Assuming this unofficial census to be approximately correct, and further admitting that two-thirds of these colors may well be mixtures, that half of those which are essentially homogeneous are listed more than once under different trade names, and that of the residue only half are of more than the slightest commercial interest, several hundred definite chemical species still remain which are liable to be met with at any time in colored industrial products of recent manufacture in this country. It is evidently of much economic importance to the general manufacturer and consuming public, and to the true interest of the honest color maker and dealer, that convenient and reliable analytical methods should be found for the identification of all these dyestuff species."

The following is an abstract of the table of contents: Historical Sketch of the Development of General Methods for Dyestuff Identification, Directions for the General Analytical Procedure in the Examination of an Unknown Dyestuff, Use of the Analytical Tables, Analytical Tables, Identification of Dyestuffs in Mixtures.

Elevators, their Care and Operation; 47 pages, 7 by 10; Aetna Life Insurance Co., Hartford, Conn.

This book is issued by the Aetna Life Insurance Co., to give the public information regarding the care and operation of elevators. A copy should be in the possession of every operator and owner of an elevator. The reading matter is well arranged and the book contains many excellent illustrations.

The Canadian Farmer, the General Consumer and the Wool Tariff; by E. B. Biggar; The Biggar-Wilson, Ltd., Toronto, Can.

The third edition of this pamphlet has just been issued and we understand that there has been a call for it in this country owing to the agitation over the wool tariff. Mr. Biggar begins with an interesting historical sketch of the wool industry in Canada and then takes up the Introduction of the Factory System, The Development of Sheep raising, The Wool Industry in the United States, The British Wool Industry, Processes of Manufacture, Tariffs in the United States and Canada, Inequalities of the Tariff, Imports, The Farmers' Home Market, Questions of Policy, Reasons for Reform, Prices of Clothing in Canada and the United States, The Food Value of Sheep and the Effect of the Tariff on the Farmers.

The pamphlet which is written in a very clear and interesting style and illustrated with numerous instructive charts, cannot fail to have an important influence on public opinion, particularly among the farmers, showing them that they have common interests with the manufacturers and consumers.

## Business Literature.

Avenarius Carbolineum; The Carbolineum Wood Preserving Co., 187 Franklin St., New York.

Bulletin No. 34, containing practical evidence of the value of Avenarius Carbolineum as a wood preservative. It also gives information as to the best methods of application. Mill men who once use this product become permanent customers. Some mills always keep it in stock and treat all their repair work with Carbolineum. It is particularly valuable for dye house and bleachery floors which are exposed to moisture or in outdoor work.

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The J. M. Roofing Salesman. The H. W. Johns-Manville Co., Cleveland, O.

A monthly publication devoted to J.-M. roofings and building materials giving facts about the merits of this roofing, and illustrating buildings on which it is used. It also contains news matter interesting to dealers and those interested in the dealers who handle the H. W. Johns-Manville Co.'s products. It will be mailed on application.

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Blower Equipment for the Modern Foundry; American Blower Co., Detroit, Mich.

A very attractive 23-page catalogue describing and illustrating the American Blower Co.'s system of heating apparatus, ventilating plants, cupola blowers, mechanical draft outfits, blast equipment, self-oiling engines, and fans and blowers for all purposes.

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Carb-Ox Specialties; The Carb-Ox Co., Rogers Park, Chicago, Ill.

A pamptlet describing and illustrating various instruments used for gas analysis, also an automatic gas calorimeter, the Hays automatic damper regulator, differential draft gage, oil testing apparatus and recording thermometers. The gas analysis apparatus tells how much excess air is being heated under the boilers, thus indicating the waste of fuel. The apparatus enables the power producer to work out the highest possible economies in the use of fuel, whether coal, gas, oil or refuse. A copy will be sent on application.

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The Fog Horn; The G. M. Parks Co., Fitchburg, Mass.

The first blast of this publication, which is written in the peculiar style that has made other literature from this company so interesting, is attractively printed on rough finished paper, having in addition four finely coated pages with illustrations. A fog horn is intended as a warning and guide, and "The Fog Horn" is devoted primarily to the purposes of guiding those who receive it to the purchase of the Turbo-Humidifier. It tells all about it.

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The Komo Steam Trap; The Linton Machine Co., 26 Courtlandt St., New York.

A booklet descriptive of the latest type of Komo steam trap, which is now thoroughly perfected for the separation of water of condensation from steam from any source where economy is desired. The booklet illustrates and shows the construction of the trap, capacity, prices, etc. It is especially recommended in textile work in connection with drying cans, slashers, dry chambers, fan systems or blower coils.

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## Currier Needle Company.

The business formerly known as the Dodge Needle Company will hereafter be conducted under the name of the Currier Needle Co. George A. Leighton is president, and A. Currier, treasurer. They manufacture latch needles for all makes of knitting machines, and make a specialty of their lock back shank and superior rivet. There is no change in the administration of affairs in the shops, which are located at Manchester, N. H.

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## Color Cards.

Diamine Nitrazol Brown G F, Patented.

We have received a copy of Supplement No. 59 to the well-known cotton dyeing book published by Cassella Color Company, descriptive of Diamine Nitrazol Brown G F, Pat., coupled with Nitrazol C, Pat. Diamine Nitrazol Brown G F, Pat. can well be regarded as a valuable addition to the group of Diamine Nitrazol colors; when coupled according to the process described in this supplement, its dyeings are distinguished by their bright yellowish shades, which possess very good fastness to washing and acids and which are easily discharged a pure white, a feature that will commend this product to the attention of print works.

Owing to its ready solubility, it is regarded with great favor for machine dyeing. Full technical details of the application of this dyestuff are contained in the supplement and are extremely simple. Dyers and color mixers interested should inquire of any of the branches of the Cassella Color Company for a copy of this supplement.

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Diamine Nitrazol Scarlet A, Patented, and Diamine Nitrazol Bordeaux G B, Patented.

That the process of coupling is of wide extent is evidenced by the fact that the Cassella Color Company is enabled to bring to the attention of dyers two valuable products designated respectively Diamine Nitrazol Scarlet A, Pat., and Diamine Nitrazol Bordeaux G B, Pat., two products which are distinguished by their bright shades, generally good fastness to washing and easy discharge ability. These dyestuffs may be used for producing reds and clarets and also as shading products in the production of brighter shades with any other members of the Nitrazol group.

Supplement No. 60 to the volume on Cotton Dyeing is illustrated with four dyeings of each of the two products named, showing various uses to which the colors may be put. Copies of this supplement may, no doubt, be obtained upon request to the Cassella Color Company.

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## Reason.

Let us reason together; so that a great deal of talking may be done, and much time wasted, and practically nothing accomplished.—Marshall Cushing in "How."

### Wonalancet's New Mill.

The Wonalancet Co. of Nashua, N. H., are now quartered in their new mill. The business of this company under the very able and efficient management of Harry H. Blunt, treasurer and general manager, had grown to such proportions that they were unable to keep up with their orders and were compelled to build larger works.

The property consists of a picturesque group of one-story brick buildings, built in the most substantial manner, covering about 50,000 square feet of floor space. They have installed a large amount of additional new machinery of Saco & Pettee and Howard & Bullough makes, which is a guarantee of the continuation of the splendid product turned out by this company. They have almost tripled their capacity and their carded cotton for woolen mills is a well known product in the trade. They claim, "there is a Wonalancet cotton for every purpose, for every particular product, for every progressive woolen mill and that their samples prove their superiority." They have been able to make good in these statements. Their machinery is equipped with individual drives and their plant is equipped with every labor saving device which they can command. The Sturtevant blower system for transmitting their product from one department to another, is indeed a feature of great labor saving proportions. Great attention is also given to the prevention of fire and the very best shipping facilities are prevalent. Immense track accommodations adjoin the property.

We congratulate them on their fine mill and the greatly increased and continuously growing business which they deserve.

### Franklin P. Shumway Company.

Owing to their increased business Franklin P. Shumway Co., commercial advertising agents, 373 Washington St., Boston, Mass., have been compelled to enlarge and rearrange their offices and they are now better equipped than ever before to care for their customers. Their telephone numbers are now Fort Hill 1844-1845.

### Bleaching Cotton in the Psarski Dyeing Machine.

The Beckman Co., Cleveland, O., builders of the Psarski dyeing machine described in our June issue, report a very interesting test of the machine in bleaching a batch of 500 pounds of cotton yarn in skeins, the operation being as follows:

Boil three-quarters of an hour 2 per cent. caustic soda; rinse warm 45 minutes; use 19 gallons chloride of lime solution at 12° Tw. to machine filled with water; run 30 minutes; rinse warm 20 minutes; rinse cold 5 minutes; add 7 1/2 pounds sulphuric acid; circulate 20 minutes; rinse cold 20 minutes; total time, 3 hours and 5 minutes.

They report that the old method of doing the same work was as follows: One thousand pounds of cotton handled in a regular kier; the material is boiled 8 to 12 hours; the cotton yarn is removed to wash and to chlor; it takes from 12 to 15 hours to run a complete set through a kier.

### Presses for Textiles.

The Crawford presses, manufactured by Spence & Rideout of Nashua, N. H., are adapted for all kinds of textile goods and the variety of presses made by this company are of interest to all branches. With the record of over forty years' experience in building these specialties, the product of this concern is recognized and their machines are found in all parts of the country. They manufacture both screw and hydraulic presses adapted to both hot and cold pressing for woolen, worsted, hosiery, underwear and felts. One of their specialties are their presses with solid steel plates for cold pressing.

Both members of the firm are practical men and the best workmanship possible goes into all machinery sent out by this firm. Besides building, they pay particular attention to repair parts. In addition, they handle a full and complete line of press papers and fender boards of all sizes, weights and colors. Mills contemplating adding presses of any nature would serve their interests well to write them for catalogues and prices.

### The Georgia Industrial Association.

The tenth annual meeting of this association was held at Brunswick, Ga., on June 17, 1910. An address was delivered by President J. J. Spalding of Atlanta and Lewis W. Parker of Greenville, S. C., on "The Necessity of Cooperation and the Advantages to be Gained." There was also a discussion of the question of excess bagging and of plans proposed by Messrs. Fuller E. Callaway, J. L. Hand, L. C. Mandeville and F. B. Gordon for disposing of manufactured textile goods.

The following officers were elected: Chas. D. Tuller, Atlanta, Ga., president; Fuller E. Callaway, LaGrange, Ga., vice-president; H. L. Johnston, Fairburn, Ga., secretary and treasurer.

Executive Committee: H. P. Meikleham, Lindale, Ga.; J. L. Hand, Pelham, Ga.; L. C. Mandeville, Carrollton, Ga.; E. W. Swift, Columbus, Ga.; J. J. Spalding, Atlanta, Ga.; and Chas. D. Tuller, Atlanta, Ga., Fuller E. Callaway, LaGrange, Ga., ex-officio.

Legislative Committee: Dr. Jeff Davis, Toccoa, Ga.; S. A. Carter, Atlanta, Ga.; F. B. Gordon, Columbus, Ga.; B. F. Walker, Monroe, Ga.; B. M. Stallworth, Gainesville, Ga.

### Lignite for Fuel.

One of the largest plants we know of that uses lignite for the production of power is The Texas Portland Cement Co. of Dallas, Texas. Recently an extensive engineering test has been run upon the equipment of this company by Arthur D. Little, Inc., of Boston. This party of engineers assigned to this work was made up of Dwight T. Randall, in charge of the fuel engineering department; John G. Callan, electrical engineer; Charles H. Jumper and Arthur D. Camp, chemical engineers. The rated capacity of this plant is 3,000 h. p., being one of the largest installations of gas engines and gas producers in this country.

### Purifying Feed Water.

Clean steam generating apparatus is essential for economy. The rational way to have clean heaters, pipe lines, and boilers is to remove from the water the impurities which it contains.

That boiler owners who have bad water to contend with realize that scale and corrosion stand for waste and expense is evidenced by the number of orders for the Scaife and We-Fu-Go Water Softening and Purifying systems placed with Wm. B. Scaife & Sons Co., of Pittsburg, Pa., in addition to orders for the We-Fu-Go system for the purification of water for textile, laundry and other uses. Among some of their recent orders are the following:

Josephine Furnace & Coke Co., Josephine, Pa., 7,000 h. p. We-Fu-Go System; Friend Paper Co., West Carrollton, O., 4,000 h. p. We-Fu-go System; American Sheet & Tin Plate Co., Wellsville, O., 2,500 h. p. We-Fu-Go System; Aeolian Company, Garwood, N. J., 1,200 h. p. Syphon Continuous System; Pennsylvania Steel Co., Lebanon, Pa., 9,000 h. p. We-Fu-Go System; Fayette Coal Co., Nobletown, Pa., 750 h. p. We-Fu-Go System; Lawrenceburg Roller Mills Co., Lawrenceburg, Ind., 750 h. p. We-Fu-Go System; Fox River Paper Co., Appleton, Wis., 1,875 h. p. We-Fu-Go System; Davis & Quick, Brooklyn, N. Y., Dyers and Finishers of Cotton Goods, 2,000 gallons per hour We-Fu-Go System.

### The Purchase of Coal.

The methods employed in coal buying have undergone a revolutionary change in the past few years. Within the memory of every manufacturer the price per ton delivered at his boilers was the only consideration given the matter of coal. Coal was coal and all coal looked alike to him.

Nowadays every manufacturer, who makes any pretense of being up to date, knows that there is a vast difference in coal and that what he is really buying is not so many tons of black mineral, but so many B T U's, which is another way of expressing the heat value of the coal. It is often possible to save as much as 10 per cent. in fuel bills by the selection of coal that is well adapted to the conditions in the plant and at the same time low in price when heating value is considered.

The United States government and some great power users have long bought coal from this standpoint, but now, through the facilities offered by the commercial laboratories, there is no reason why any manufacturer should not be able to buy his coal with the same technical knowledge of its real value that is available to the big plants.

The laboratory of Arthur D. Little, Inc., 93 Broad St., Boston, Mass., was the pioneer in this work and today its fuel engineering department is one of its busiest branches, numbering among its clients many textile manufacturers who consult it in reference to the purchase and analysis of coal, as well as other problems, such as lubrication, analysis of supplies, chemicals, etc. An interesting booklet on the subject has been issued which may be had on application.

### New Machinery Agency.

Eugene Szepesi, of Szepesi & Farr, 90 West St., New York City, has just returned from Europe, where he arranged to act as American agent for several foreign textile machine builders. His new connections include looms, spinning machines, mercerizing horizontal revolving system, testing instruments, silk dyeing machines, etc. Adding these to his other lines will give this concern a broad scope in dealing with the textile mills in this country.

### The New Factory of the Cooper-Hewitt Electric Company.

The demand for Cooper-Hewitt lamps has entirely outrun the capacity of the New York factory. For some months past the present works have been so congested with orders that it has required great efforts to give the prompt service which the Cooper-Hewitt Electric Company has always made one of its basic business principles. For several months the company had been looking for a suitable site or building and has recently purchased the substantial structure that is located at the corner of Grand and Eighth Sts., Hoboken, N. J. The new location affords the advantages of the best of light and air, and the railroad and shipping facilities are equal to those of the metropolis. Recent rapid transit facilities place the building within twenty minutes' ride of either the financial or uptown sections of New York.

The factory will be equipped as rapidly as possible with modern machinery and devices for the manufacture of the Cooper-Hewitt lamp. Power and electric current will be supplied by the Public Service Corporation of New Jersey. The new alternating current type of Cooper-Hewitt lamp will be the first to be manufactured in the new plant. The work on this lamp will begin as soon as the requisite machinery can be installed.

The building has four stories and a basement; the total floor space is 60,000 square feet. The building is divided in the center of its length by a 16-inch fire wall, in which all openings are guarded by sliding fire doors equipped with low temperature fuse releases. An elevator gives access to all floors on either side of the fire wall. The building is equipped with a combination gravity and pressure sprinkler system. The machine department will be equipped with electric motors, which will be arranged for individual and group drives.

While no efforts have been made on the part of the Cooper-Hewitt Company to carry on a spectacular selling or publicity campaign, the lamp has steadily increased in popularity and sales, and has always kept the factory facilities employed to the full.

The company has followed a wise policy of conservatism, believing that a mistake avoided is far better than a mistake patched up. The Cooper-Hewitt lamp has undergone improvement in details in the natural course of development, and has lived up to all the claims made for it, with a considerable margin to spare. The manufacturers of the Cooper-Hewitt lamp have always be-

lieved that the place to do experimenting is in the factory, and that the public have a right to expect a commercially perfect article; such the Cooper-Hewitt lamp has always been. As a consequence of the greatly enlarged facilities afforded by this new plant, a more aggressive sales policy may be expected, so that the merits of the Cooper-Hewitt lamp will become more widely known.

Nothing succeeds like success, and the occupancy of this new plant is certainly the most substantial proof of the success of the Cooper-Hewitt lamp.

## $100 Reward For a Name.

Spinners and others will be interested in the offer made in our advertising columns by the National Glide Proof Co., 115 Broadway, New York, for a name. They are about to introduce a substitute for leather, to be used in covering top rolls in spinning frames. They want to get an appropriate name and invite the co-operation of mili men and offer to pay $100 to the person who suggests a suitable name which is adopted and used as a trade mark.

## The Care of Cotton Belting.

Cotton belting must be as thoroughly protected as leather to remain in good condition through a long life. This applies to all cotton belting, whether woven, or canvas folded and stitched, and whether filled or unfilled. The former, commonly known as "painted canvas" belting, is by far the more common. This form is filled with some preparation to prevent stretching and waterproof it, and covered on the outside with one or two coats of red paint, thus forming, while new, a good and comparatively cheap belt for rough, hard work. When run with proper slack this kind of a belt gives splendid service for a while without attention, the length of time depending upon the character of the work, the load, the amount of slipping and the exposure. The painted canvas belt is fairly waterproof when new because the paint on the outside and the gum in the filler naturally keep the water out. But after a painted belt has been in use for some time, the paint wears or chips off the inner surface, leaving the pores more or less open. If no protective measures are taken the gum in the fibers gradually hardens and the belt becomes stiff. At this stage cracks appear upon the back of the belt, working in from the edge.

Water cannot get out of as easily as it can get into the minute cracks and if its entrance is permitted at all the fabric sooner or later rots. The original preservative and waterproofing materials begin to fail from age, and as they do so must be replaced or the belt cannot long withstand the strains of service and exposure to decaying influences. Outside of all considerations of belt preservation, proper care of any canvas belt will pay well in the increased amount of power transmitted. Where the belt is kept in prime condition it continues to transmit full load without the necessity of tightening to prevent slip. This in itself effects a big saving in decreased attention, less trouble from hot boxes, worn bearings and a minimized internal friction load. The possibilities of careful treatment of a painted cotton belt are well illustrated by a 10-inch heavy canvas belt at the plant of the Richford (Vt.) Mfg. Co. The 14-inch pulley on the motor runs at 850 r. p. m. and delivers to a 40-inch pulley on the shaft. The belt was an old one which had frequently been cussed as no good and was put into service only as a makeshift. At first this belt would not carry the friction load, and had to be treated with Cling-Surface, a preservative preparation made by the Cling-Surface Co. of Buffalo, N. Y., for belting and ropes. Now this belt transmits 85 h. p. without sign of slip, although the sag is 23 inches from direct line of the pulleys.

Another typical example is that of a 12-inch canvas belt which has been working for seven years in the plant of the Marion (Ind.) Stove & Foundry Co. and has been treated with Cling-Surface throughout that time. It runs from a 72-inch driver (200 r. p. m.) to a 42-inch driven pulley on 11-foot centers and delivers 50 h. p. Although the sag is 17 inches under greatest load, there is no slip. The belt is always clean and pliable and never requires other attention than an occasional application of the preservative.

Plain canvas belts are used mostly in uniformly dry places because in their natural state they are easily influenced by atmospheric conditions. If not given special treatment they act something like a clothes line—tight on damp days and loose on dry days. If left unfilled, a woven canvas belt, and most of them are woven, is apt to stretch a great deal and in doing so is reduced in thickness and width. There is a considerable advantage in treating these belts with a preservative waterproofing composition in that the inner fibers mat down closer without the surface cracking and by increasing the density, firmness and weight of the belt prevent the stretch to a considerable degree. A belt of this kind once saturated with Cling-Surface or any other waterproofing compound is impervious to moisture and should give better service than a rubber belt in places where climatic conditions or running water are otherwise troublesome. In such service the treated canvas belt often prove less expensive in the long run than the rubber belt.

Applying preservative to cotton or other belting is a matter of small effort and will always prove profitable over letting belts take care of themselves.

## The A. & M. College.

At the graduation exercises of the A. & M. College, Raleigh, N. C., T. B. Summerlin of Mount Olive, N. C., was awarded the students' medal given by the National Association of Cotton Manufacturers. This medal is awarded to the student having the highest excellence in his work in the textile department.

This is the third consecutive year that this medal has been awarded the above textile school.

During the past year machinery manufacturers have donated machinery to the value of over $1,600 to the school.

## A Balata Belting Factory.

Announcement is made that a great Balata belting factory is to be built by American and German capital in the United States. Though hundreds of thousands of feet of balata belting are in service for transmission purposes in the United States at the present time, not one foot of this kind of belting is manufactured in America. All of it is put together in factories in Germany or England and imported here. The announcement, therefore, that a syndicate has been formed to introduce this industry into the United States will be of considerable interest to manufacturers generally and especially to those who at the present time are using large quantities of this kind of belting.

The corporation behind the new enterprise is known as the Victor-Balata and Textile Belting Company. The American interests represented in the new company are Charles E. Aaron and John R. Stein, president and treasurer, respectively of the New York Leather Belting Company of New York City. The German interests are represented in the new company by William Vollrath, Albert Vollrath and Edwin Vollrath of the firm of C. Vollrath & Son of Blankenburgh, Germany. The latter company is the largest of the textile belting manufacturers of Europe and the former company were pioneers in first introducing balata belting to the American market.

The officers of the new combine are Charles E. Aaron of New York, president; Edwin Vollrath of Blankenburgh, Germany, secretary, and John R. Stein, New York, treasurer.

The new plant will entail an expenditure of half a million dollars in buildings and equipment and will be located at Easton, Pa. Work on the first two buildings will be begun immediately.

The factory site covers nine acres of ground and is located to the westward of Easton in a suburb known as Palmer. So important is the project, however, that the city of Easton will extend its limits to take the new plant within its borders to give it the benefit of fire protection. A 1,000-foot siding is being built at the present time by the Lehigh Valley Railroad from its main tracks to the factory site to handle the freight.

Two buildings to be erected immediately include the main factory building, 150 feet in length by 100 feet wide, and an impregnation building 75 feet deep and 60 feet wide. Both buildings will be constructed of concrete and structural steel to render them absolutely fire-proof.

Another interesting feature connected with the new plant is that a complete miniature village will be erected on the site to house the workmen of the plant. All the dwellings will be of concrete. A large plant for the weaving of cotton duck will be an added feature.

The advent of a plant for the manufacture of balata belting to the United States brings out many interesting features relative to the manufacture of this type of belting. One of the most interesting is the extreme secrecy which has always guarded the various plants where this belt has been manufactured abroad. Balata belting is composed of cotton duck and a substance known as Balata gum, a South American product. Few patents have ever been taken out on the manufacture of this belt or the machinery and processes used.

The Vollrath interests in Germany maintain one of the largest balata belting factories in the world. All the machinery for the operation of their plant has been constructed behind closed doors in their own foundries. Workmen who know the secrets live and die in the employ of the concern.

Specially woven cotton duck is also made in this plant abroad. The looms upon which the duck is woven are built by the makers of the belt and a heavier and more evenly stretched duck is produced from these looms than from any other looms in Germany. The process of weaving is also regarded as secret. No visitors under any pretext are ever allowed in the Vollrath plant.

The same precautions will be observed in the new plant at Easton. The machines complete for the manufacture of the belt, as well as for the weaving of the cotton duck, are being constructed abroad and will be shipped to America and installed under the personal supervision of William Vollrath, senior member of the German firm. His son, Edwin Vollrath, as soon as the factory is ready for operation, will make his home permanently in the United States and will act as executive head of the factory, having under him workmen skilled in the manufacture of balata belting.

Until less than ten years ago no one in the United States knew what balata belting was. For thirty or forty years it has been a staple belt on the European market and was used largely in place of the European makes of leather belt.

Small quantities of balata belting were imported here by the New York Leather Belting Company about a decade ago. It was tried out for a time with little success. Then certain changes were made in the method of its manufacture which made it successful on American machinery. For the past five years approximately a million dollars' worth of this type of belt has been imported here annually. Balata belting will withstand dampness and changes of climate and is a hardier belt than rubber belting. The success balata belting has met in America has brought three or four European manufacturers of balata belting to America. All of them are importing up to this time. The heavy import duties and the delay in filling special orders, etc., have in large degree limited the sale of the belt.

It seems probable that the building of this big plant for the manufacture of balata belting will mean a large increase in its use and a diminution in its price.

The Victor-Balata and Textile Belting Company also contemplates the building of several other factories on its site for the manufacture of other textile belts, similar to textile belts manufactured in the United States. A novel feature is the fact that the company will not only make its own belts but also weave its own duck. None of the textile belting manufacturers are at the present time weaving their own duck, though many of them have it made in textile mills, where it is woven under their own specifications.

The new plant expects to begin installing its machinery in September and be in full operation late in October. When the chain of buildings for the new plant are completed the plant will be the largest textile belting factory in the world.

# Recent Textile Patents.

BRAIDING MACHINE. 960,122. Otto Steinmann and Xaver Pfrunder, Wohlen, Switzerland.

DYE-VAT CHARGING Apparatus. 960,662. Barthelemy Mayoux and Charles Verchere, Izieux, France.

FABRIC. Waterproof. 959,178. George Streat, New York.

KNITTING MACHINES. Fabric-cutting Device for. 960,755. Frank B. Wildman, Norristown, Pa.

KNITTING MACHINE Bed. 959,822. William O. Wait, Jackson, Mich.

KNITTING MACHINE Yarn Trap. 959,252. Joseph Pearson, Philadelphia, and Harry Carter, Wrightsville, Pa.

LOOM. 960,820. Augustin J. Chevrette, Worcester, Mass.

LOOM Embroidery Attachment. Weaving. 960,741. Louis Veyron, Paris, France.

LOOM. Weft Replenishing Mechanism. 959,036. Jean Wenning, Muelhausen, Germany.

LOOM for Weaving Pile Fabrics. 960,171. Leonard H. Hartley, Lowell, Mass.

LOOM. Weft Replenishing. 961,668. Francis E. Ashton, Exeter, N. H.

LOOM. Weft Replenishing. 959,132. Albert A. Gordon, Jr., Worcester, Mass.

LOOM. 959,174. Renceler C. Snow, Ware, Mass.

LOOM. 958,874. Robert H. Hunt, San Francisco, Cal.

LOOM Pattern Mechanism. 960,214. Joseph T. Cyr, Worcester, Mass.

LOOM. Tufted-fabric. 960,824. John A. Clark, Worcester, Mass.

LOOM. 960,019. Robert H. Hunt, San Francisco, Cal.

LOOM SHUTTLE Race. 960,433. Edward Stutz, Paterson, N. J.

LOOMS. Thin Place Detecting Mechanism for. 959,654. William C. Trombly, Lowell, Mass.

LOOMS. Bobbin Stripper for Weft Replenishing. 13,119. Frederic W. Moore, Millbury, Mass.

LOOMS. Wire Motion for. 960,211. Fred A. Whitmore, Philadelphia, Pa.

LOOMS. Weft Replenishing Apparatus for Weaving. 960,965. Lucien Langenieux, Roanne, France.

LOOMS. Thread-cutting Temple for Weft Replenishing. 961,439. Albert A. Gordon, Worcester, Mass.

LOOMS. Wire Motion for. 960,211. Fred A. Whitmore, Philadelphia, Pa.

NECKTIE. Braided. 958,872. Otto Holzhey and Otto Dickhaus, New York.

SPINDLE. Pneumatic. 961,307. Reuben H. Moore, Jefferson, Ind.

SPINNING and Twisting Frame. 959,198. Thomas A. Boyd, Shettleston, Scotland.

SPINNING and Twisting Machine. Robert Dawes, Philadelphia, Pa.

SILK-LIKE EFFECTS. Compound for Producing. 960,100. Leon Lilenfeld, Vienna, Austria-Hungary.

SPINNING or Twisting Machine Yarn or Thread Guide. 961,421. Isaac E. Palmer, Middletown, Conn.

TEXTILE Conditioning Apparatus. 959,067. Isaac E. Palmer, Middletown, Conn.

YARN and Making Same. 961,441. James G. Harrison, Lawrence, Mass.

YARN-WAXING Device. Nathan E. Kahn, Woodbine, N. J.

WEAVING PILE Fabrics. 959,306. James Buckler, Philadelphia, Pa.

WOOL. Apparatus for Removing the Grease and Yolk from. 961,468. Robert Vandatte and Benoni Lagye, Antwerp, Belgium.

WOOL WASHING Machine and the Like. 961,023. Frederick G. Sargent, Graniteville, Mass.

## Recent Textile Trademarks Registered.

"Tibrode." Double woven cotton cloth. Tingue, Brown & Co., New York.

"Hymo." Haircloth in the piece. James Hymans, London, England.

"Tech." Undershirts, drawers, hosiery, etc. Nathan Stein & Co., Pittsburg, Pa.

"Excelsior." Shirts, undershirts, drawers and union suits. Chas. E. Shedaker & Sons, Philadelphia, Pa.

"Admiral." Dress shirts. Harris-Lipsitz Co., Dallas, Tex.

"Rue de la Paix." Women's and men's gloves. John Wanamaker, New York.

"Park Mill." Hosiery. Neustader Bros., San Francisco, Cal.

"Big Five." Overalls, jackets, jumpers, etc. Shull-Day Co., Tacoma, Wash.

"Challenger." Hosiery. S. Shapinsky & Co., Louisville, Ky.

"The Weston." Hosiery. Issachar Cozzens, Glen Cove, N. Y.

"Loxor." Silk, cotton, mercerized and machine sewing threads. Gudebrod Bros., N. Y.

"Duchess." Men's half hose, ladies' hose and children's hose. L. Herzog & Bro., Dry Goods Co., St. Louis, Mo.

"Beaver Tail." Braid. August Moll Mfg. Co., New York.

Wisconsin, Eau Claire. A meeting of stockholders of the Eau Claire Linen Mills Co. was held recently to consider whether the plant, which was recently destroyed by fire, would be rebuilt. No decision was reached in the matter and the question will be left open for 60 days.

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